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IN THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

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WATER meter advertising claims for the superiority of various makes and types of meters must, to say the least, be confusing to the average waterworks man. What do the terms, "most accurate", "durable", "long life", "low maintenance", mean? They have long been bandied about by practically all manufacturers. It would appear that a water department could buy any meter, from the cheapest to the most expensive make, and based on its advertised virtues, expect to receive the finest measure of performance and value.

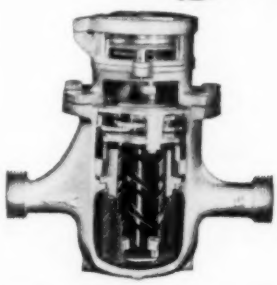
It is quite generally agreed that in anything you buy you get only what you pay for, and water meters are no exception. Those who buy on low price alone usually end up by spending more than the cost of the best meters through premature repairs, service interruptions and revenue lost by inaccurate measurement.

We, at the Pittsburgh Equitable Meter Company, have been in the meter business over 50 years. During this long period we have gained an enviable reputation among waterworks men, which we will not jeopardize by producing an inferior product or by making misleading statements in our advertising. "Truth in Advertising" has always been part of the Pittsburgh Equitable creed, and statements made about any Pittsburgh meter are facts, not claims, that can be definitely proven. We manufacture all types of meters in the *quality* field. Our entire efforts are, and always have been, directed towards providing the waterworks industry with the best meters it is possible to make at prices that are real bargains when all the factors entering into measurement costs are analyzed.

PITTSBURGH EQUITABLE METER COMPANY
MERCO NORDSTROM VALVE CO.

NEW YORK · BUFFALO · PHILADELPHIA · KANSAS CITY · TULSA · LOS ANGELES · *Main Offices* · PITTSBURGH, PA. · DES MOINES · CHICAGO · COLUMBIA · MEMPHIS · OAKLAND · HOUSTON

PITTSBURGH IMO METER

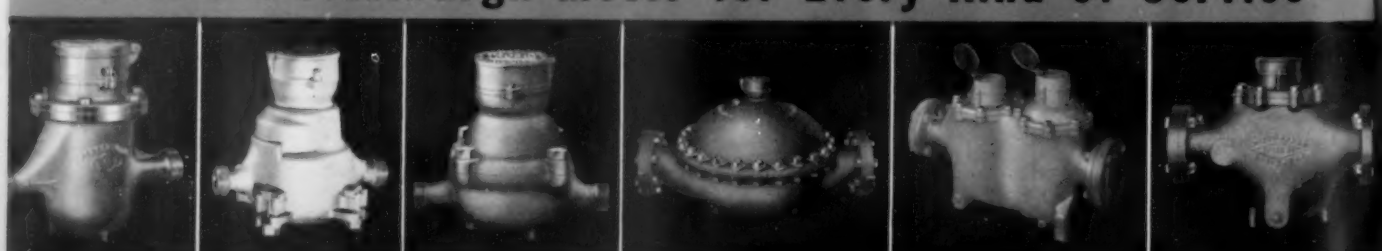


The IMO, the acknowledged leader in the domestic meter field, has reached that position by living up to every claim made for it. Thousands have been put through every conceivable test by waterworks men on their own provers and on their own lines. They have proven themselves to be more accurate than any other commercial type of water meter, particularly on low flows where such a large portion of revenue is being lost. Even more remarkable, exhaustive breakdown tests proved this high initial accuracy to be sustained accuracy, and the absence of wear, even after several million gallons had been measured, demonstrated that the IMO was built for years of service at rock bottom maintenance costs. Absolute silent operation was another feature noted and appreciated by many water superintendents who had experienced consumer complaints regarding the noise made by existing meters.

You are invited to test this meter on your own lines. Ask for a demonstration or write for a copy of Bulletin W-529.

Remember PITTSBURGH IMO METERS WEAR IN WHERE OTHERS WEAR OUT

There's a Pittsburgh Meter for Every Kind of Service



IMO
domestic meter, noted for s quiet operation. The est accurate water meter er commercially built.

ARCTIC
A domestic disc meter with frost protected construction for use in colder sections of the country.

TROPIC
A domestic disc meter of the split case type used where frost protection feature is not necessary.

ARCTIC-TROPIC
A disc type meter, made in larger sizes, for services having uniform volume.

ARCTIC-TROPIC COMPOUND
Measures both large and small flows. Widely used on industrial services.

EUREKA
A current type mete for measuring large, and idly flowing volumes.

New WPA Rules Affecting Municipalities

Two Important Features, 1940-1941 Appropriation

CONGRESS has just completed action on the 1940-1941 Work Projects Administration appropriation, two features of which are of special interest to city governments.

First, the requirement that sponsors contribute at least 25 per cent of project costs is continued, with modifications, despite criticisms that it has had undesirable effects. The chief complaint is that communities in which need is greatest often are least able to meet this condition—poor people make poor governments—with the result that WPA is unable in some cases to fulfill its function of relieving destitution. Since the 25 per cent is required of the state as a whole, there is some flexibility; but Colonel Harrington points out that it is difficult to "equalize" contributions because wealthier communities are not persuaded that they owe an obligation to their poorer neighbors; preferential treatment for the latter would result in demands for similar consideration for the former; and the minimum contribution tends to be regarded as the maximum. Additional difficulties are encountered on non-construction projects for which expenditures on items other than labor (WPA pays the security wages) often fall considerably short of one-fourth of total project costs.

WPA recommended repeal of this section, so that it could meet local situations "more completely." Colonel Harrington believes that the statutory limitation on Federal non-labor expenditures to $6 per man per month provides adequate protection to the Federal Treasury. He supports his case by the steady rise in sponsors' contributions even before the adoption of this section, which is partly responsible for further increases and for reduction in differences in the proportion of total costs borne by various states. Controlling opinion in Congress, however, is that local governments have received great material benefits and have "chiseled on the Federal program" by balancing their budgets with Federal funds, although they are able to bear a larger share of the relief burden. It is believed, also, that substantial local contributions increase the care with which projects and workers are selected for the WPA program. To promote the national defense program, however, projects certified by the Secretaries of War and of the Navy, respectively, as being important for military or naval purposes (National Guard camps, ship yards, airports, etc.) are exempted from the 25 per cent requirement,* and WPA is authorized to spend up to $25,000,000 to supplement the $6 per man per month available for other than labor costs on such projects.

Non-Federal Buildings

Second, Congress has liberalized the stipulation that Federal expenditures on non-Federal building projects shall not exceed $52,000 each. It is impossible to determine how many plans for more expensive projects have been discouraged, but WPA compiled a list of 260 projects with a total cost of more than $55,000,000 which otherwise would have been submitted by sponsors; and the proportion of WPA expenditures and employment on building projects this year has been somewhat below that of last year.

Feeling that this limitation on building projects was insufficient protection for their interests, representatives of contractors and building trade unions sought this year to extend the restriction to other WPA construction—"bridge, viaduct, stadium, underpass, tunnel, or other structure." Their spokesmen argue that WPA has become "a giant construction industry in competition with legitimate private industry" and is "spreading ruin and bankruptcy throughout the building industry." Union leaders complain that WPA employs unskilled workers on construction projects and breaks down union ranks, and drives skilled craftsmen on relief. Contractors assert that "at least 50 per cent" of WPA construction ordinarily would be done by them. They fear that local funds previously used for the PWA program, now in process of liquidation, will be diverted to work relief, which they claim is inefficient. Under a restriction such as they proposed, it was said that there would remain much useful work to be done in maintenance activities and on "small projects—sidewalks, sewers, plenty of things of that sort."

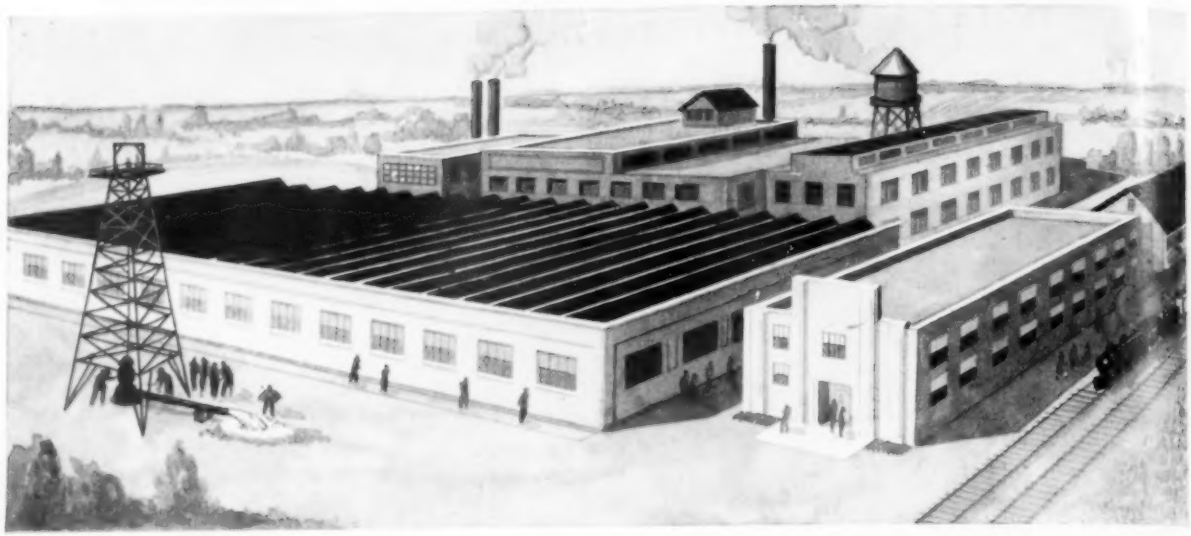
Creating Wealth to Offset Public Expenditures

The objective of WPA, however, is not merely to relieve destitution among employables, but also to provide such assistance through work on worthwhile projects which will use the skills and maintain the morale of relief workers, and will create wealth to offset public expenditures. Currently about three-fourths of the WPA workers are employed on construction projects, a large proportion of which, especially in cities, involve Federal expenditures over $50,000. To limit Federal funds for such operations to that amount would mean prohibition of many of WPA's most valuable projects, and an expansion of "boondoggling" with its attendant depression of relief workers' morale and increased public criticism—which is what some of the program's opponents desire. Furthermore, it would increase the difficulty of securing the required 25 per cent sponsors' contributions, which are greatest on the more substantial projects. President Roosevelt expressed opposition on the ground that the limitation would interfere with the national defense program. With respect to charges of competition, it may be observed that the dollar volume of public construction last year (about 2.2 billion) was nearly as great as it was during the boom years, although it is estimated that (aside from the defense program) it will be only about half as much this year, and that the depression in the construction industry is due chiefly to the decline in private building. WPA does not operate in the latter field, and it claims that in the former it does not approve projects for "normal" public works submitted by sponsors, that "90 per cent" of the work it does would not be done at all if it were not for Federal aid. Also, contractors benefit from rental of equipment used on WPA projects. Finally, operation on force account is considered to be adapted better than the contract method to the necessarily flexible program of WPA.

In the face of such protests from the President, WPA, local government officials, and Congressmen, the House rejected its Appropriation Committee's recommendation to extend the $52,000 limitation (reduced to $50,000) to other construction projects. In the process, it also removed last year's limitation on Federal expenditures for building projects; but subsequently it agreed to a Senate amendment to restore the limit on buildings alone, which, however, has been increased to $100,000 and exempts those which are important for military or naval purposes, such as armories.

ELIAS HUZAR,
Department of Government, Cornell University.

* Also exempted are projects "which authorize necessary temporary measures to avert danger to life, property, or health in the event of disaster or grave emergency caused by flood, storm, fire, earthquake, drought, or similar cause."



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Layne Water Systems

● **First:** back of Layne there are over fifty years of outstanding success—the kind of success that only satisfaction and performance could win. ● **Second:** Layne offers world-wide experience in the mastering of every geological, mechanical and water production problem. And, ● **Third:** Layne wells and pumps possess exclusive, patented and thoroughly proven advantages.

On reputation, Layne scores at the very top, a factor which promotes confidence in their ability and desire to fulfill contracts to the letter.

Furthermore, from Layne you can obtain, without obligation, dependable counsel and engineering service in the planning of a well water system that adequately and most economically fills your need. This service applies to the reconditioning of old wells or the installation of entirely new units.

Any Factory, Municipal, Paper Mill, Oil Refinery, Railroad, Irrigation or Business Executive may secure a complete file of bulletins, catalogs and folders on Layne Wells and Pumps without obligation by addressing,

LAYNE & BOWLER, INC.
Dept. B, Memphis, Tenn.

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FOR MUNICIPALITIES • INDUSTRIES • RAILROADS • MINES AND IRRIGATION

Our Municipal Notebook

Wesley Bintz, Designer of the Type of Pool Pictured Above

A Swimming Pool Specialist

BECAUSE WESLEY BINTZ, consulting engineer, of Lansing, Mich., builds municipal as well as private swimming pools, I should like the cities to know of the fine cooperation and excellent engineering service he recently rendered in installing a pool for the Bellevue Country Club, of which I am president.

Wesley Bintz has developed two unique ideas in this field. One is the so-called Bintz Pool, a combination pool and bath-house which, besides claiming at least ten advantages over the conventional sunken pool and bath-house, shows a saving, where correctly located, of 25 to 40 per cent in costs. This pool is sometimes referred to as the inverted straw-hat pool. The other idea is an Ovoid pool which, besides having four or five distinct advantages over the conventional rectangular pool, shows a saving of better than 10 per cent in its costs.

Mr. Bintz has been in this line of work for over twenty years, and has over 60 pools to his credit, including the famous James Whitcomb Riley Memorial swimming pool.

WILLIAM B. STARK,
President, New York State Golf Association, Syracuse, N. Y.

Laboratory Tests Show

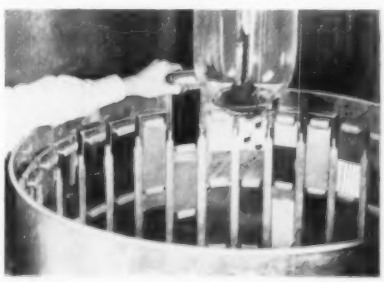
A CHEAP HAT may be very expensive on a per-month-of-wear basis compared with a high-priced hat made by a reputable manufacturer. Both hats are made to sell; but in the second case the manufacturer is selling himself along with his hat. Municipal users of materials and equipment, and purchasing agents too, have long since learned that a low price may have very little to do with economy.

Price bidding is necessary in the cases of many commodity purchases by municipal governments. The important feature to strive for, of course, is to have the prices apply to the same grade of commodities. There are two ways of attaining this: by confining bidding, or selection, to "responsible" manufacturers, or by buying on specification. The success of both methods rests on reliable tests.

A number of municipalities have discovered that it pays to have real laboratory tests made on all the makes of a commodity used in quantity by the municipality. Newark, N. J., for instance, is having such tests made and thus gradually building lists of trustworthy manufacturers for bidding. The humblest commodity will not be overlooked if it is used in quantity. Erasers are an example. Instead of buying any eraser that is offered, Newark has determined who makes good erasers, and buys from these manufacturers. If performance tests are worth running in the case of erasers, how much more important are tests on paper, lamps, electricians' rubber gloves, tires, fuel. Some of the larger municipalities are finding the desirability of testing all makes of these and dozens of other items, in order to find which makes are comparable and reliable. This practice, moreover, frequently results in extending the list of bidders to include makers who formerly were not given due consideration. Hundreds of cities, for example, buy a certain product from one or the other of two manufacturers, whereas there are at least four other "or equal" makers of this product. Laboratory tests would establish this fact to their satisfaction.

It is impossible to buy many products on specifications without resort to careful laboratory tests. Most city governments do not possess the facilities for making these tests. In some of the larger cities there are commercial, technical, scientific laboratories capable of making many, and in a very few instances all, of the necessary tests. They merit considerably larger use by city governments than they are now receiving. As the numerous values of these tests become known, these laboratories will be called on more and more.

The American Council of Commercial Laboratories now has at least 19 members located in Chicago, Cleveland, Dayton, Des Moines, Detroit, Fort Worth, Hoboken, Los Angeles, Memphis, New York, Oklahoma City, Pittsburgh, Richmond, San Francisco, Seattle. Here alone is an armament of facilities analyzing, inspecting, testing products and devices to insure the use of the most economical products.

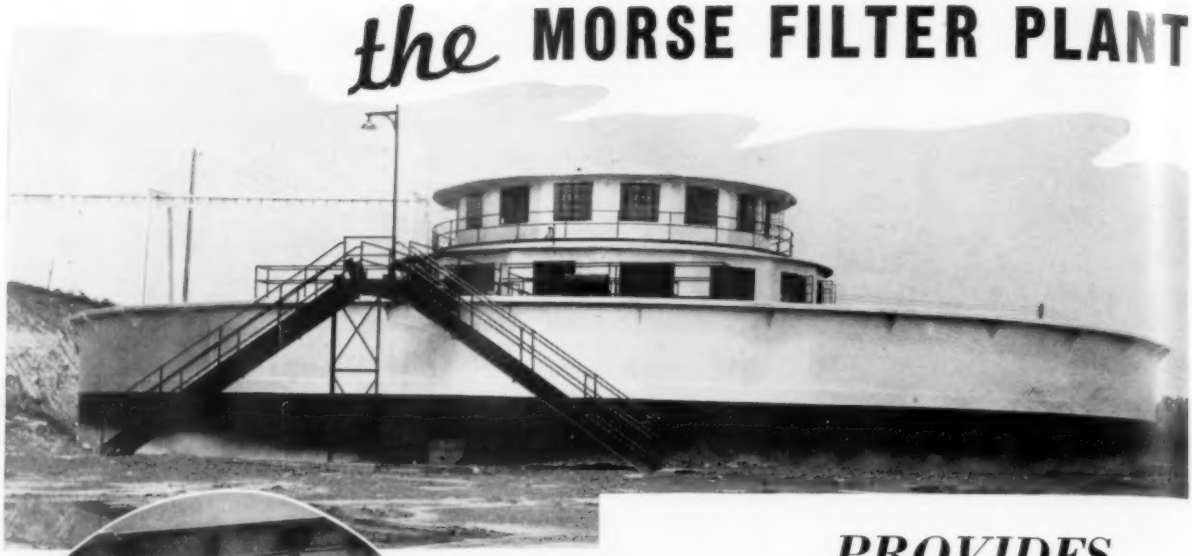


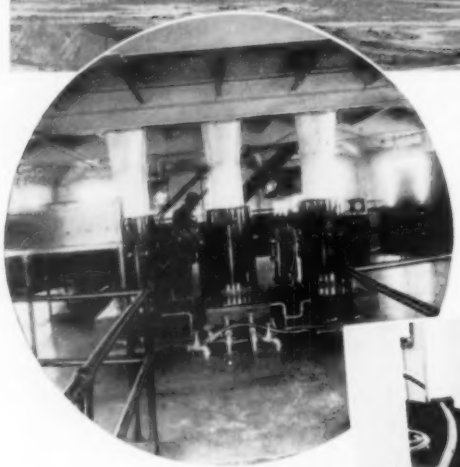
In this weatherometer, paints, varnishes, fabrics and other materials are subjected to the deteriorating effects of artificial sun and rain. In a comparatively short time the relative resistance of such materials to aging is revealed

Traffic Safety

To reduce traffic accidents, find where, when and why they happen, put police at the danger spots, hire a traffic engineer.—PAUL G. HOFFMAN, The Studebaker Corporation, at N. Y. State Conference of Mayors, Rochester, N. Y., June 11, 1940.

the MORSE FILTER PLANT





Above: Morse Filter Plant service at Irvin, Pa. Left: View of the operating floor at the center of the filter unit.

Right: Interior view of 720,000-g.p.d. Morse unit at New Bethlehem, Pa., showing a filter bed during washing.

Left: Operating "circle," with sight well in the center, of a typical Morse Plant installation.

. . . PROVIDES MODERN LOW COST WATER FILTRATION

LOW initial cost, low maintenance expenditures and long life of the Morse Filter Plant make this scientifically-advanced installation highly economical. The plant requires less ground space per unit of capacity and is more easily installed. Built entirely of steel, the Morse unit reduces replacements and lowers maintenance costs. Loss of head through the plant is less, effecting reduced pumping costs.

Not only is this modern plant notable for its economy but also for providing maximum service with ease and smoothness. It is flexible in operation and application, enabling waterworks engineers to plan for capacity needed—secure in the knowledge that additional units can be added economically when required. Existing installations record that a consistently satisfactory effluent can be maintained easily. Operating rate variations are quickly accommodated. Each of the Morse Filter Plant's rapid sand type filters may be operated independently, taken out of service or washed without disturbing other filter operations. For further information, please address our nearest office.

CHICAGO BRIDGE & IRON COMPANY

Chicago	2127 McCormick Bldg.	Philadelphia	1616-1700 Walnut St.	San Francisco	1033 Rialto Bldg.
New York	3308-165 Broadway Bldg.	Boston	1501 Consolidated Gas Bldg.	Houston	918 Richmond Avenue
Cleveland	2236 Rockefeller Bldg.	Birmingham	1502 N. Fiftieth Street	Tulsa	1625 Hunt Bldg.
Detroit	1501 Lafayette Bldg.	Dallas	1606 Praetorian Bldg.	Los Angeles	1403 Wm. Fox Bldg.

Plants at BIRMINGHAM, CHICAGO, and GREENVILLE, PA. *In Canada:* HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

Water-Works Operations

South Dakota Plant Debt-Free This Month

On July 1, 1940, the municipal Water Department of Sioux Falls, S. Dak., retired a $100,000 issue of water-works bonds and became debt-free. This is the final payment in retiring a total of $600,000 in bonds floated since 1903 to establish the present water system.

According to Commissioner Joseph S. Nelson, since the first issue of $210,000 was voted, in 1903, Sioux Falls voters have consented to a $100,000 issue in 1911, a $140,000 issue in 1915 and a $150,000 issue in 1920. The first bond issue, in 1903, enabled the city to build a small system composed of a pump house, one well, a water tank and a few miles of water mains. This has grown to include a modern power plant, a purification plant, eleven wells, four elevated storage tanks and 115 miles of water mains, valued at $2,644,971.

With the retirement of these bonds, according to Commissioner Nelson, the Water Department has completed a remarkable record of fourteen years by providing from its earnings the necessary funds to retire the water-works bonds, and also to make $750,000 plant improvements and water-main extensions, and to contribute more than $1,000,000 to the general and other funds of the city for public improvements and reduction in the tax burden. In addition, the Department has provided free hydrant rental and water to city departments that would be valued at several hundred thousand dollars. A reduction in the water rates is to be made effective January 1, 1941.

Water Rates Charged Various Universities

State Universities and Private Colleges for the most part pay the same water rates as ordinary customers, according to a recent survey by the Municipal Finance Officers' Association of the United States and Canada, covering 25 cities in which such educational institutions are located. An examination of practices in these cities shows that in all but four the state educational institutions paid the regular water rates. These four cities are Gainesville, Fla., Atlanta, Ga., Charlottesville and Richmond, Va.

Free water was one of the considerations granted when the University of Florida located at Gainesville in 1905, the city reported. Water is furnished the University of Virginia at Charlottesville at a special contract rate. State institutions at Richmond pay about one-third the regular rate, while Atlanta furnishes one state institution with 200,000 cubic feet of water a month free.

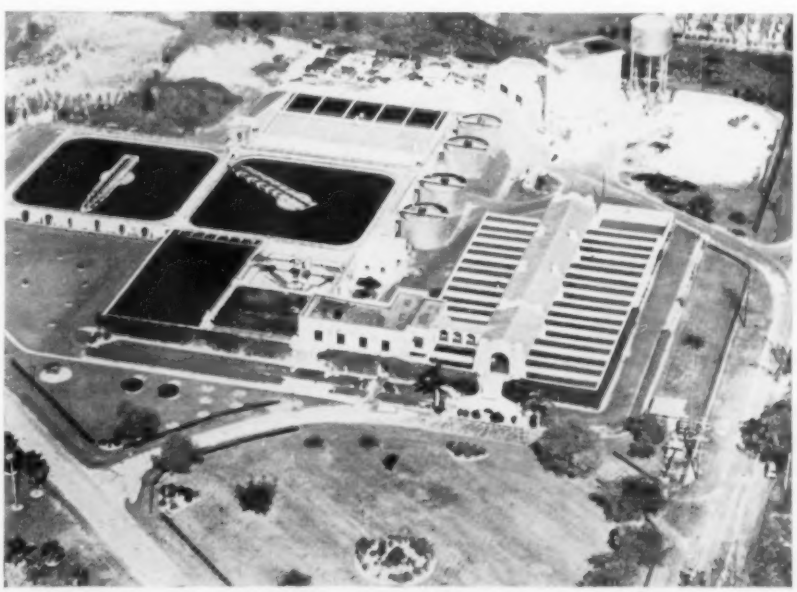
Private colleges in all cities but two, Columbia, Mo., and Rochester, N. Y., pay the regular water rate. In Columbia, private schools pay only a little over production costs, while private educational institutions in Rochester pay about two-thirds of the regular rate. The University of Missouri, located in Columbia, has its own water plant, and the University of Toledo, a municipal institution at Toledo, Ohio, pays no water rates.

Water-plant operators and private accountants are in general agreement that all persons and governmental departments receiving water should pay for it at the regular rates. This would correctly disclose the earnings of the utility and also throw light on the real operating costs of all governmental agencies.

Emergency Chlorination Through a Hydrant

An Example of the Ingenuity of State Board of Health engineers in assisting local water-works operators to overcome emergencies, comes to us from North Woodstock, N. H. In the flood of September, 1939, a number of emergency chlorination installations were required in New Hampshire, where there were breaks in the mains. In North Woodstock there was a bad break in the supply main, making it necessary, for a short time, to resort to pumping from the west branch of the Pemigewasset River. The day after it was learned that this source was being utilized, boiling notices having been issued meanwhile, a Proportioneers' Chlor-O-Feeder using a hypochlorite solution was installed.

The Chlor-O-Feeder was set up on an empty egg case adjacent to a fire hydrant into which a hypochlorite solution, prepared in a large earthenware crock, was pumped, while a Fire Department pumper delivered water into the system through the hydrant instead of the usual procedure of pumping from the hydrant. The chlorine solution from the crock was injected at a pressure of about 50 pounds, the pump being electrically operated, as fortunately current had become available that day following a failure in the electrical service. Shortly after the emergency water supply and chlorination was hooked up it was found feasible to abandon the river intake, and to insert a temporary hose connection in the break on the regular supply line.



An aerial view of the Miami, Fla., Water Works, which has a combination watershed and playground, since some of the wells are located on the Municipal Golf Course at Miami Springs where the annual $10,000 Miami Open Golf Tournament is held. Miami is now purchasing its water distribution system from a private company for $5,500,000

NEWEST examples of Goodyear's never-ending effort to build still greater quality and value into truck tires are these two new companions in low-cost long-distance wear — the new Goodyear HI-MILER *Rib* and HI-MILER *All-Weather*.

In the new HI-MILER design a greater percentage of tread rubber is concentrated in the load-carrying tread-center, making a 12% to 15% thicker tread with the deepest non-skid built into a general purpose highway tire.

As a result, in regular trucking service HI-MILERS will deliver premium performance — but you pay no premium for them!

No other truck tires offer you all these improvements

1. Tread thickness increased 12% to 15%
2. Highest practical percentage of tread rubber in load-carrying area
3. Multiple compounding insuring maximum bond between tread and carcass
4. Low stretch Supertwist cord providing greater resistance to heat and fatigue

And this longer mileage is *safer, trouble-free* mileage because other major structural improvements give the HI-MILERS greater resistance to heat and fatigue —to cutting, chipping and bruising.

For general on-the-road work, where long, slow, even wear is the principal consideration, specify HI-MILER *Rib* tread. For road conditions where extra traction is needed along with uniform long wear, the HI-MILER *All-Weather* fills the bill. With either you'll find it true: *Goodyear tires are as good as you think, and cost far less than you imagine!*

Hi-Miler, All-Weather, Supertwist—
T. M.'s The Goodyear Tire & Rubber Company

THE GREATEST NAME IN RUBBER

GOODYEAR

More Tons are hauled on Goodyear Truck tires than on any other kind

Refuse Collection and Disposal

Board Reports on New York Landfills

THE BOARD APPOINTED BY DR. THOMAS PARRAN, Surgeon General of the United States Public Health Service, to investigate the landfills maintained in the Borough of Queens, New York City, under date of June 19, 1939, has made its preliminary report. After answering the four questions which were definitely propounded in the stipulation, the Board made the following recommendations, and in doing so, stated definitely: "It is not intended to imply that the procedures here recommended are not now being followed in whole or in part."

1. The disposal of wastes by the landfill method should be planned as an engineering project. Operation and maintenance should be under the direction of a sanitary engineer.

2. The face of the working fill should be kept as narrow as is consistent with proper operation of trucks and equipment, in order that the area of waste material exposed during the operating day be minimal.

3. The exposed surface should be covered with earth as promptly as is consistent with proper operation, and at the close of each day's operation both the surface and the face of the fill should be completely covered, the object being to make a closed cell of each day's deposit.

4. Sufficient standby equipment should be provided to prevent delay in covering, due to breakdowns or peak loads.

5. Waste building material, concrete or other bulky waste material which may furnish rat harborage should not be used for the final surface or side slopes, but should be promptly incorporated within the fill.

6. The final covering for surface and side slopes should be maintained at a depth of approximately 24 inches.

7. In case the finished fill has a boundary side slope, the toe of the slope should terminate in a sand- and gravel-filled ditch. This will prevent raveling of the toe with exposure of some of the waste material, will prevent the burrowing of rodents, and, finally, will obviate puddles by permitting seepage from the fill to be absorbed into the ground.

8. Spraying of the exposed waste material and adjacent surfaces should be used when necessary to allay dust.

9. As a rule, the layer of refuse should not exceed an average depth of about 8 feet after compacting. Where deeper fills are necessary, the filling should be carried on in stages.

10. Control over the blowing of papers should be adequately maintained by the use of movable snow-fencing.

11. While the maintenance of proper earth covering as hereinbefore recommended will to a large extent prevent fires, water under pressure should be available for fire-fighting purposes. If scavengers are tolerated, they should be adequately supervised.

12. All collections of surface water resulting from these landfill operations should be drained, filled or treated with effective chemicals so as to prevent mosquito production or allay disagreeable odors.

13. Where necessary, effective steps should be taken to prevent floatage of waste material into open water.

14. Inspection for and control of rodents should be maintained until the fills are stabilized.

15. After the active period of filling operation is completed, a maintenance program should be continued until the fill has become stabilized so as to insure prompt repair of cracks, depressions and erosion of the surface and side slopes.

16. Studies of the varied problems involved in landfill operations should be continued and should include researches into the biological, chemical and physical activities, as well as the engineering, economic and administrative aspects of the subject.

The Board which unanimously concurred in the report consisted of: Dr. Milton J. Rosenau, Director of the Division of Public Health of the School of Medicine, University of North Carolina; Dr. Eugene L. Bishop, Director of Health for TVA; Dr. Kenneth F. Maxcy, Professor of Epidemiology and Bacteriology at Johns Hopkins University; Dr. Huntington Williams, Commissioner of Health, Baltimore, Md.; and Dr. Ralph E. Tarbett, Senior Sanitary Engineer of the United States Public Health Service.

Pay-as-You-Go Plan for Refuse Collection

IN GRAFTON, W. VA., a pay-as-you-go plan is in effect to finance refuse collection, and coupon books, selling for $1.50 and $3.00, are on sale. Prior to this system, it was the custom for the city collectors to make weekly collections of the amounts due from the householders. With the coupon plan, however, a cash-in-advance plan prevails, and the collecting crews are not permitted to take money. It is believed that the use of these books has resulted in a better system of records for the Department, generally improving the financing of the service.

Olympia, Wash., uses its D4 powered Traxcavator to load street gravel and to maintain the refuse dump

Complete coverage QUICK ...WITHOUT INCREASING YOUR TAX MONEY

DITCH-TO-DITCH MAINTENANCE

At a fraction of former costs, W-Speed Patrol handles complete ditch-to-ditch maintenance. Works most streets at 3 to 5 m.p.h. Powerful enough to replace heavier, more costly units on oil mix patching, cleaning ditches, park terracing and landscaping work. Ideal for maintaining airports, parkways and playgrounds. Is equipped with electric lights and starter. Averages only one gal. fuel per hour.

You can have THREE W-Speed Patrols for the price of one large motor grader—cover THREE times the area...and at practically no increase in operating expenses. Your money goes three times as far. W-Speed Patrol cost per running mile is 1/3 to 1/2 that of large motor graders.

THREE maintenance units instead of one! Think what this means. After a rain you have three times the chance to cover all your streets before traffic can raise havoc with them. At all times you can keep three times as many miles of street in first-class condition . . . thereby make three times as many taxpayers happy—at no extra cost.

Start this lower cost, complete coverage plan . . . NOW. Let your Allis-Chalmers dealer prove . . . on your own streets . . . what W-Speed Patrols can save you.

ALLIS-CHALMERS POWER

TRACTOR DIVISION—MILWAUKEE, U.S.A.

TRACTORS, ENGINES, ROAD MACHINERY

.. IT DOESN'T COST .. *it Pays!*

Street Cleaning—Leaves and Snow

The Gedge Cyclone Removes Leaves from the Gutters and Packs them in Bags in Wyoming, Ohio

Wyoming, Ohio, Solves Leaf-Removal Problem

While Many of Our Large Cities have remained helpless in the face of the whirlwinds of leaves which settle in the gutters of their streets each fall, a sensible, practical, easily constructed machine was built in the village of Wyoming, Ohio, under the direction of Service-Director F. G. Gedge. The village was faced with a real problem when a ban was placed on burning leaves in the city streets, so Mr. Gedge developed his own vacuum cleaner.

The machine consists of an exhaust fan mounted on a Ford passenger car chassis and driven by a separate Ford motor through a V-belt. A platform is built on the rear of the chassis for carrying the bags, into which the leaves are blown by the fan. In ordinary operation, when the leaves are in windrows along the gutters, it is possible to operate the leaf remover with a driver and one man to watch the spout and rake the leaves from the grass plots along the curb into the gutter. The leaves are blown into large bags which are tied over the discharge end of the fan and which are tied up as soon as they are filled, and left as a fleet of baby blimps along the gutter to be picked up by other village trucks and disposed of without being permitted to blow around the streets.

In discussing the machine, Mr. Gedge stated: "We have found the machine to be very economical and satisfactory in our leaf-removal problem. We have some 15 miles of streets here in the village, which is strictly a residential community and is noted far and wide for the many beautiful shade trees lining the streets. By removing leaves in this manner we found particular advantage in having them sacked for handling, as the fan packs them very tightly into the sacks, which are approximately 4 feet in diameter by 10 feet long. By having the leaves sacked we are able to haul two or three times as big a load on one truck as is possible by the use of side-boards and hand loading. By the use of this machine we are able to handle the entire leaf problem without burning any leaves in the streets or yards, which was a major advantage this year due to the extremely dry weather, and we thus obviated a fire hazard."

Street Cleaning Costs in 26 American Cities

American Cities spent an average of $437 a mile for street cleaning in 1939, according to a sampling survey of 26 cities made by a committee of the American Public Works Association. The total bill for the 26 cities, all with over 100,000 population, amounted to $19,000,000.

The biggest street cleaning bills were reported by New York City and Chicago. With 3,788 miles of streets to clean, New York City paid out $8,962,328 for cleaning costs, including the wages of 9,680 employees. Chicago, with 3,183 miles of streets, plus about 1,000 miles of alleys, had a cleaning bill of 1,694,293, hiring more than 800 employees.

The major share of street cleaning appropriations was spent for labor, with wage rates higher in the snow-belt cities than in the South. The rate of pay per hour averaged 34 cents in the far South, and 62 cents in the cities reporting from other parts of the country. Truck drivers in the street cleaning department averaged 47 cents an hour in the South and 76 cents in the other cities. Several cities, including Detroit, Boston and Minneapolis, reported using relief labor in street cleaning operations.

Per capita expenditures reported by the 26 cities varied from 23 cents to $1.20, with an average of 55 cents. The average cleaning done by each worker was shown to be 3.35 miles a day.

Street cleaning bills cannot be compared on the basis of total appropriations or per capita amounts, since many factors such as standards of cleanliness, purchase of equipment, and differences in wage levels must be considered. The report states: "With few exceptions there seems to be insufficient money available in most of the larger cities to enable the maintenance of proper standards of cleanliness." Of twenty officials commenting on present appropriations, twelve said an increase was needed, in some cases double the current funds.

Removing 100 Inches of Snow in Bangor, Maine

The 1939 Annual Report of the city of Bangor, Maine, one of the most interesting reports received in this office, states that the winter of 1938 and 1939 in Bangor was marked by an unusual snowfall. The usual average for that vicinity is about 65 inches, but in that particular winter a total of approximately 100 inches was recorded at the City Garage. The snow began with a blizzard on Thanksgiving Day in 1938 and continued well into April, 1939, when 13 inches of snow fell. The streets were ploughed eleven times and the sidewalks fourteen, at an average cost per storm for snow removal, based upon eleven storms, of $1,711.45. All streets and roads, with the exception of a few dead-ends, were kept open at all times for travel. Snow removal is in charge of Philip H. Glover, City Engineer.

Public Works Congress
American Public Works Association
Detroit, Mich.
September 30 - October 2.

REPORTER: What's the lowdown, captain?

FIREMAN: Can't blame the man—it's the hydrant!

"How's that? The hydrant knocked him off?"

"Not exactly—it was the shock of the water . . . whipped the hose when it was turned on. Down in this end of town, you see, we still have hydrants that let the first water through with one tremendous rush. The man who fell wasn't familiar with that shock—the rest of the city is all Ludlow equipment . . . slide-gate type hydrants, that give us quick water with minimum shock."

LUDLOW HYDRANTS

The slide gate principle, developed and perfected by Ludlow, insures *complete security* in fire hydrants. It provides *all* these advantages:

Quick Water with least possible shock. Proper shut-off without water hammer.

Proper Drainage. Hydrant automatically drained at lowest point when closed.

No Flooding. Accidental breaking of the hydrant, such as might result by collision from a heavy truck, will not cause flood since the gate when closed is wedge-locked.

Easy Inspection and Servicing without unscrewing anything below the ground level. All working parts removed as one unit by lifting stem through top of hydrant.

Ludlow Valves

The parallel seat, double wedge type slide gate valve, developed and perfected by Ludlow, has been the universally accepted construction in all waterworks valves for nearly three-quarters of a century. It provides *all* these essential benefits:

Smooth, Positive Operation. Gates positioned *directly* opposite ports before wedging, and entirely unwedged *before* being raised.

Positive Closure — even after years of service in the open position; flexible-action gates *self-adjusting* to seats.

Self-Cleaning. Rings cleaned *throughout entire stroke*. No *internal guides* to cause foul-up.

Ready Replacement of Parts. Simple construction and ample tolerances make possible ready replacement of parts.

NON-CLOGGING DRAINAGE

Closure of hydrant automatically opens this drain, which is located at the lowest point. It remains open until automatically closed by the action of opening the hydrant.

The LUDLOW VALVE MFG·CO·INC· SINCE 1866 TROY·N·Y·

Public Safety

Hartford's Motorcycles Economical

THE HARTFORD, CONN., POLICE DEPARTMENT is using 11 police motorcycles, 7 Harley-Davidsons and 4 Indians and we find that the RCA radio-equipped motorcycle has proved to be a tremendous aid in police work. Motorcycles are used in all types of police work—apprehending speeders and other traffic-law violators, as escorts and for emergency work.

We find them efficient and also economical to operate.

HARRY W. WADSWORTH,
Captain, Police Traffic Division.

Motorcycle Officers of the Hartford, Conn., Police Department

Radio Police Talks Win Friends

WHEN THREE RAPS OF THE GAVEL are heard, it signifies that "Traffic Tribunal" is on the air and 115,000 Los Angeles citizens are listening. The script is written by an officer of the Traffic Division, and checked by Captain B. R. Caldwell, Director of Traffic.

"We're attempting to eliminate some of the red tape that people run across in their dealings with city government," says Captain Caldwell. "The number of questions on the traffic laws which are coming in bears out our contention that many regulations are violated because the offender doesn't know any better. *For every person who writes a question, we know that there are hundreds thinking the same question.* An answer over the air to the writer will clear it up for other listeners."

A motorist may notice a bush or a limb from a tree hiding a traffic signal. A pedestrian may find that the signals are timed too short for an aged person to cross the street. Someone may notice a STOP sign down, a street light out, a sign or a tree which makes a blind corner out of an intersection. Since a different office of the city government handles each of these matters, the average citizen doesn't know where to report. A penny postcard to Traffic Tribunal insures investigation. Letters have come from 183 cities in 9 states. Each is carefully checked.

KFI, the local outlet for NBC programs, donates the time for Traffic Tribunal. This station and its associate, KECA, have always been identified with civic enterprise and safety.

Besides helping make Los Angeles a safer place in which to drive, Traffic Tribunal is making friends for the Police Department. Favorable comment is heard on all sides. Other departments are writing for used scripts.

FRANK E. WALTON,
Collision Prevention Bureau, Los Angeles Police Department.

Police Broadcasts Interest Los Angeles Citizens

Cost and Coverage of the Police Force

POLICEMEN PER 1,000 OF POPULATION and per square mile, and their cost per capita for New York State cities of comparable size, have been compiled as follows by the Schenectady Bureau of Municipal Research:

City	Police per 1,000 Pop.
Albany	2.92
Troy	2.36
Mt. Vernon	2.25
Yonkers	2.19
Niagara Falls	1.68
Utica	1.67
Schenectady	1.64
Binghamton	1.58
Syracuse	1.57

City	Police per Sq. Mile
Mt. Vernon	33.4
Albany	19.1
Troy	18.0
Schenectady	15.2
Yonkers	14.5
Syracuse	12.8
Binghamton	12.1
Niagara Falls	8.1
Utica	7.9

City	Cost Per Capita
Yonkers	$7.45
Mt. Vernon	7.21
Albany	6.92
Troy	4.87
Niagara Falls	4.52
Utica	4.24
Schenectady	4.05
Syracuse	3.78
Binghamton	3.75

Duals Do Well for Minneapolis

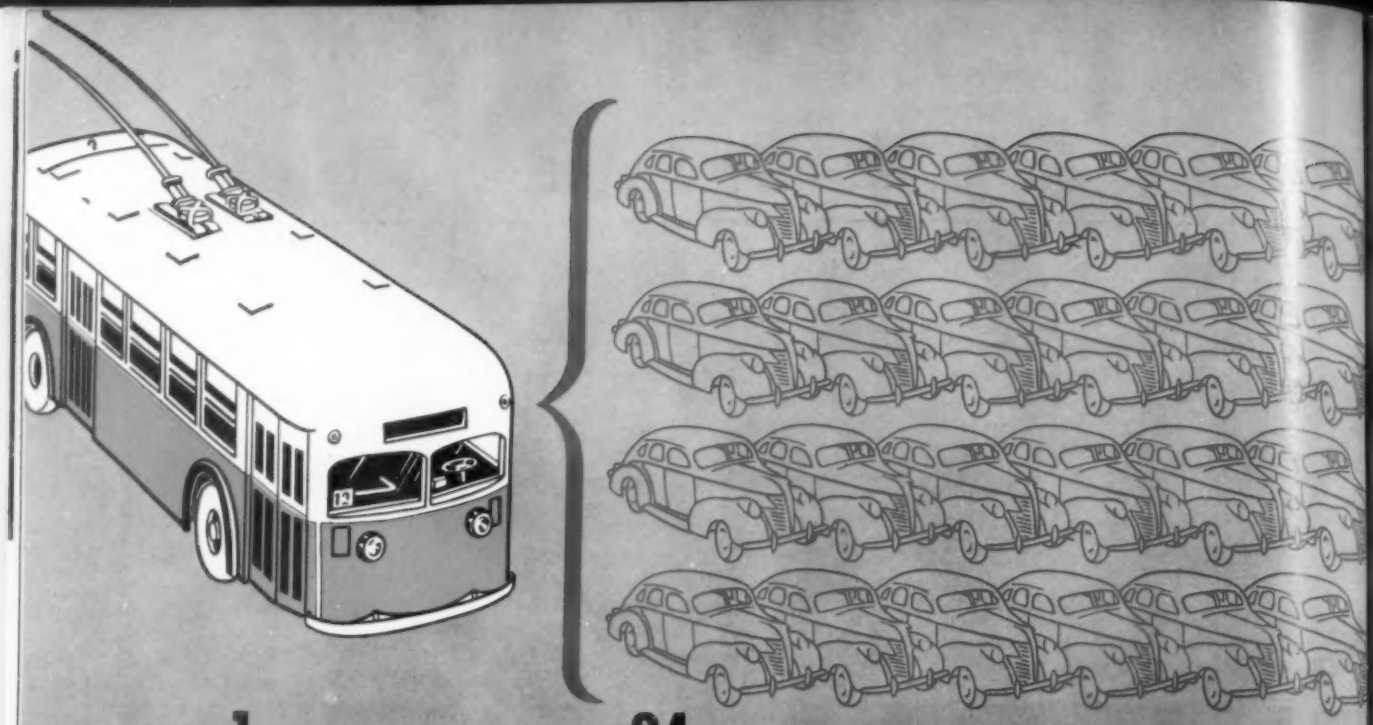
OUR PARKING METERS were installed ready for operation on May 1, this year, and we are very much pleased with the results. They have relieved the congestion in the loop area and practically eliminated our double parking problem. We also feel that they have greatly increased the turnover of cars in parking spaces in the loop area.

O. BAKKEN,
Captain Traffic Division, Minneapolis, Minn.

Corner—or Suspended—Traffic Signal?

EVEN IN NARROW STREETS, diagonal sidewalk standards should be installed, so that the signal will be in direct view of the approaching traffic, vehicular or pedestrian. Where this is impossible and no poles are available, or where it is impossible to put a pole in if the sidewalks are too narrow, it may be necessary to attach a suspension cable to the buildings and suspend a four-way, three-light signal. Of course, today the signals are considerably lighter than they were in former days, so the suspension is not a particular hazard, but it is difficult to replace the bulbs when they burn out.

PAUL P. HORNI,
Vice-President, Horni Signal Mfg. Corporation, New York.



1 TROLLEY COACH = 24 AUTOS IN CARRYING CAPACITY*

(No Parking Space) (500 Curb-ft. of Parking Space)

*Based on a nation-wide city average of 1.75 passengers per automobile

Shreveport Used This Equation to Solve Its Parking Problem

The modernization program of the Shreveport Railways has led 146% more people to ride the trolleys.

With your co-operation, your transit company can modernize to bring equally remarkable results—and help solve your traffic problems.

The Shreveport Times

TROLLEYS AND PARKING

Unquestionably the high quality of Shreveport's trolley service tends to lower the number of cars moving into the downtown district from residential area. Hundreds of Shreveporters who drove their cars to work or to shop in the old street car days, now use trolleys.

Since three trolleys can carry as many passengers as are carried in 70 automobiles, this transition from individual transportation to mass transportation undeniably has eased Shreveport's traffic and parking problem. We venture to say that had the old street car system been retained, Shreveport's downtown parking conditions would now be utterly intolerable.

Fortunately, the mass transportation phase of a city's traffic system tends to develop naturally, once it is pointed in the right direction. In Shreveport's case, growing patronage of the trolleys will hasten further expansion and improvement of trolley service, thus keeping a continuous check-rein on the volume of auto traffic moving into the downtown area and on the number of cars to be parked there.

This one influence alone will not solve a city's downtown parking problems. But it will help. We believe the cities which still have antiquated or inadequate mass transportation facilities would find study of the subject profitable.

GENERAL ELECTRIC

108-S

Vol. LV, No. 7 The American City JULY, 1940

The Cities' Role in the National Defense Program

DURING the next two years there may be more profound changes in thought and action in the United States than could have been dreamed of by the combined imaginations of Jules Verne, Edgar Allen Poe, H. Rider Haggard and H. G. Wells.

Some of these changes will be forced upon us by conditions abroad; others will be of our own making. If we are to emerge as a greater nation, constructive planning must replace impulsive agitation. To the greatest extent compatible with the maintenance of our democratic institutions, each element of the nation must know its place, its job and its objective.

What shall be the course of the city governments? Shall they tighten their belts, resolve to maintain only those services immediately essential, to take a seat at the foot of the political and social table? Or shall they, as the authorities closest to the people themselves, seek popular support for putting those services in a condition to meet adequately, as far as can be foreseen, the serious emergencies against which the Federal Government is preparing?

Essential Local Services

What are these services? Are they of merely local moment or are they an integral part of the national organism and defense?

They are water—police control —fire protection—the airport—sewerage—public health services—light and power—adequate and well-maintained streets and roads —housing and community facilities for industrial workers.

Water in ample quantity is needed everywhere, not only to maintain life itself but also to facilitate industry and to preserve property, and the communities themselves can best develop and maintain the supplies. Efficient local police, directed by radio and keeping modern records for use, are needed not only to safeguard the community but to preserve the seed of a future democracy as well. The more efficient the local police, the less will the martial-law aspect be demanded. Fire protection is needed, with water, on a conflagration scale. The municipal airport must anticipate a substantial enlargement of its facilities and activities. Every effort will be made by the country at large to popularize air travel, in order to expand the commercial lines to the largest dimensions the country can afford: there can be no more economical and effective way of attracting and training the largest volume of pilot personnel.

The sewerage system is in the first line of defense of public health, with modern hospitals, while electric light is not only an urgent convenience but a morale factor as well. Electric power is essential to many local industries which are keys to the production capacity of the nation. Streets and roads must permit traffic to flow speedily and safely. Decent and adequate housing is essential to efficient production and to demonstrate democracy's ability to provide living standards worth preserving.

If actual invasion should threaten, other steps in local preparedness would, of course, be essential, especially in cities along the Atlantic, Gulf and Pacific coasts. Aside from defense of the cities in these areas by Federal and state troops, steps would have to be taken by municipalities to assure the organization of protective units such as the A. R. P. units in Great Britain. This would involve activities of the police department with the Red Cross and civic organizations, while the water works would take every precaution to prevent damage to vital units in the impounding and distribution systems. The fire department would need to expand its organization through volunteers to take care of conflagrations resulting from air raids. The maintenance of streets following air raids would be another task requiring serious consideration, to permit fire apparatus and other emergency equipment to move quickly.

Industrial communities might well consider adoption of the Putnam Plan, which has been used so successfully in Springfield, Mass., for supplying well-trained workers to factories as a part of the defense program. This has worked to reduce unemployment and to furnish a reservoir of trained workers who can be absorbed by manufacturing plants as skilled artisans are required for expanding activities.

Democracy and Efficiency

All these services, with the possible exception of airports, are essentially local services. With a determined policy to develop and maintain them with truly modern efficiency, the municipal government and officials can manage them. It is reasonable to expect that the Federal Government will desire the local governments to retain this responsibility, not only to prevent imposing infinite detail on the national administration, but as essential to the preservation of the home-rule privileges and duties of a free people. In most Ameri-

can cities, fortunately, elective and appointive officials are to be found with the intelligence, energy and courage to rise to this sacred duty. Each town ought to be so managed that the state can concentrate on its rightful functions, and the Federal Government, confident that the political subdivisions are in order, can concentrate on the objectives essentially national in scope.

This is the way to a true defense of a land and institutions and people worth defending. The financial and political pressure of welfare and relief demands during the last ten years has weakened the thinking if not the actual independence of too many municipal governments. While much dependence on Federal aid has been unavoidable because of the limited revenue sources of the cities, the defeatest trend toward demanding that the state and nation assume the unpleasant burdens of the cities has been much too general.

The tremendous physical activity of a general defense program should remove almost entirely the local relief burdens, except for the aged and sick. Shorn of the costs and distractions of unemployment relief, the city government can concentrate on the strengthening of its own vital services.

The first need of the country at all levels of government is for intelligent leadership and intelligent mechanization; the man-power is adequate. The men are the potential motivating forces for the machines which as yet exist in too limited numbers. Back of the workers are their families, whose morale is equally important. Civilian morale is furthered by having a job to do, by being a part of a plan for building better communities, by having all local services and officials geared to that objective. This means spending money, but it does not mean wasting money. It means taking an inventory of the physical municipal resources, listing the weak links, studying the improvements which need to be made, and making engineering and financial plans to provide these local defenses. In addition to providing adequacy in the vital services already enumerated, municipalities are the custodians of more than half the children of the country. If these children are proud of their home towns, they will be proud of their country, and national defense will be a success constructively.

The job of municipal governments is to build security through those local facilities for the good life that enhance health, safety, and good spirits. Conversely, the health and good spirits which result from civilized living and an eager local participation in the national life best assure security.

Mayor LaGuardia on National Defense

WE must show the world that democracy can marshal its people and become as powerful as any totalitarian state.

Assuming that the war ends today or tomorrow or the day after, with victory for Germany and Italy, the world crisis is by no means over; and the quicker the American people understand that, the better it will be for our security and future prosperity.

We must not fail to realize that it was unity of the German people in getting back of the government, or rather the government forcing the people to support it, that made possible the production of their war machine and military victories. German successes were not due to the tanks or air force but to the unity of the German people.

We don't approve of the methods of bringing about that unity. Those methods are abhorrent to us. We can't adopt such methods. But their successes were due to the unity of Germany and careful, deliberate and unemotional planning.

We have the advantage of natural resources and mass production and there is no need to be alarmed or timid that we cannot produce all that is necessary for the protection of our country. But we have got to do it. You can't do it unless there is real driving action behind it.

While we may be divided on political questions we cannot be divided on matters of foreign policy and defense. We must stand united on that.

—From an address by Mayor F. H. La Guardia, of New York, on June 20, 1940.

Our Defense Must Be from Within

(From the 1940 National Conference of Social Work)

From a Resolution Adopted by the Conference:

The sixty-seventh meeting of the National Conference of Social Work proceeded under the shadow of a war which threatens the very existence of our modern civilization. It has been difficult to think clearly or to plan hopefully in an atmosphere of impending disaster. Throughout the Conference sessions, however, there was insistence that democracy is the only true way of life, and that we must hold its hard-won gains in civil liberties, in the protection of the unfortunate, and in living standards in America.

From the Presidential Address of Grace L. Coyle:

Whether our democratic institutions and the traditions from which they spring can survive the economic dislocations of the thirties is the major issue that confronts us.

The most serious fifth column which has penetrated within our gates is the malnutrition of our population, the frustration and despair of our unemployed, the racial inequalities and antagonisms heightened by economic tensions, and the inhuman cynicisms of those among us who can realize these conditions without attempting to remedy them.

By Professor Max Lerner, of Williams College:

If recent history has any lessons to teach us, there are three that are outstanding. One is that unless an economic system can give effective security to the masses of people, they will become the stamping ground for political adventures. The second is that we long have been blind to the irrational impulses in men, and to the way in which ideas can be used as weapons in stirring up those irrational impulses. The third is that, in peace and war alike, only the well-organized and well-administered society can possibly survive.

Parliament House in Canberra

Street in Ainslie, a Suburb of Canberra

Canberra — Australia's Unique Capital

A Federal City Where the Public Owns the Land; Developed from Inception According to Plans; Improvements Not Taxed; Utilities Publicly Owned

By H. Bronson Cowan

CANBERRA, the capital city of Australia, is unique. It is the only capital city, of any country in the world, of which it can be said that:

There is no private ownership of land. The site of the city, and the land in the adjoining Federal district, are owned outright by the National Government. The land has been so owned since before the city's inception.

All increments in land values accrue to the people of the country as a whole.

Every important detail of the city's development was planned before any buildings were erected.

There is no municipal tax upon improvements.

The lighting, water, sewage and transportation services are publicly owned and operated.

The capital is fortunate in its site. The city is irregularly girt with pyramidal and table-topped mountains. Its lowest height is about 1,500 feet above sea-level. The average height of the city district is about 1,900 feet. Mount Bimberi, the highest point in the territory, is 6,274 feet.

The population is small, approximately 10,000, but, with an eye to the future, the city has been laid out on lines that will provide for substantial and spacious development. The area of the Canberra City District is 26,880 acres. The area reserved for future development comprises 12 square miles. The adjoining Federal Capital territory covers 576,000 acres, or 900 square miles.

A Planned Development

The people of Australia have planned, from its inception, that Canberra should be a capital city of which the nation could be proud. The design for the laying-out of the city was obtained as a result of an international competition, held in 1912, which was won by Walter Burley Griffin, a Chicago architect.* Mr. Griffin later was engaged by the Government to supervise the development of the city according to his own plans. Zones were established for residential and commercial purposes as well as for undertakings of an industrial character. Regulations are in force which specify not only the location but the design and character of the buildings that may be erected in each zone.

Visitors to Canberra soon realize why the people of Australia take a great delight in their national capital. It comes as near to being a model city as a city well could. The residences are modern and attractive in design and well set off by ample lawns, gardens and boulevards. The requirement that buildings must comply with specific standards has helped to beautify the city, in that there are no unsightly houses or business edifices to detract from the appearance of whole neighborhoods. Disfiguring telephone and telegraph poles, as well as billboards, have been banned.

With a favorable climate, Canberra has been developed as a garden city. Over 3,000,000 trees, including 500,000 flowering almond, cherry, peach and plum trees, have been planted along the avenues and streets in the city area, and 4,000,000 in the rest of the Federal District. In addition, there are 1,350 acres of plantations within the city and 5,500 acres in the adjoining territory. There are 80 miles of streets, including 28,000 square yards of concrete pavements. The main avenues of the city are 200 feet. In some instances they contain plantations as wide as 100 feet. One can travel for miles in a veritable enchanted land of

* See "The Plans for Australia's New Capital City," The American City, page 9, July, 1912.

lovely trees of many varieties, broad boulevards and flowering gardens. The city is divided by the Molonglo River. A beautification scheme, planned for the future, includes the construction of a chain of ornamental lakes along the river.

Public Utilities

The city's water supply is obtained from the Cotter River. The catchment area consists of about 170 square miles of uninhabited mountainous country. The water is pumped to a service reservoir of 3,000,000-gallon capacity on Mount Stromlo, from which a gravitation main extends to three service reservoirs with a combined capacity of 5,000,000 gallons. The Cotter Dam has a safe draught of 7,000,000 gallons a day, enough for 100 gallons per capita for 70,000.

The power supply is obtained from the Public Works Department of the state of New South Wales, from hydroelectric generators 50 miles away. The city area is supplied with a main outfall sewer from the city boundary to Western Creek, a distance of three miles. Transportation facilities are provided by a fleet of government-owned omnibuses.

Principal Buildings

The present Federal Parliament Buildings cover four acres and were four years in building. They are surrounded by 168 acres of parks, gardens, tennis courts and bowling greens, planted with 17,000 trees. Ultimately Parliament House will be built on Capitol Hill, shown in the upper right of the picture below.

Other public buildings include the Commonwealth National Library, Australian School of Forestry, Mount Stromlo Solar Observatory, Australian Institute of Anatomy, and the Australian War Memorial. This is a combined museum, art gallery and library of the Great War. There is a large, centrally located, public swimming pool and a good landing ground for aeroplanes.

Public Ownership of Land

Much interest attaches to the method of administering the government-owned land occupied by the city. This is all the more the case in view of the fact that municipalities on the North American continent have had scores of thousands of acres of land revert to them during recent years because of arrears of taxes and are seeking to find ways and means of selling or administering this land to the best advantage of the public.

The Seat of Government Act, 1910, provides that:

In this picture of Australia's Federal Capital, the garden planning of the city is evident, with parklands dividing the residential area into a series of suburbs. The white buildings in the center are the temporary Parliament House and two blocks of government offices. In the lower right-hand corner is a section of the Hotel Canberra

One of the residential areas at Canberra. The buildings in the foreground are part of a development that had not reached the garden-making stage

"No Crown Lands in the territory shall be sold or disposed of for any estate of freehold, except in pursuance of some contract entered into before the commencement of this Act."

The policy of not selling land as freehold has been strictly carried out. No difficulty has been experienced in inducing people to erect valuable buildings on leased lands. Leases of land outside the city area may be granted for a period not exceeding 25 years for agricultural and grazing purposes. Within the city area, the policy of the Government has been to dispose of leaseholds for land by public auction. Under the leasing system all improvements placed upon the land revert to the Commonwealth Government at the expiration of the lease. If, before the lease expires, the lessee desires to surrender it, he may do so by paying all the rent due to date and surrendering all improvements on the land without compensation.

The Leases Ordinance provides that the terms of leases shall not exceed 99 years, the rental shall be at the rate of 5 per cent per annum, on the unimproved capital value as ascertained by bids at public auction or assessed by the Government; such rentals to be subject to reappraisement after a term of twenty years and thereafter ten years. In 1936 this ordinance was amended, and reappraisements are now made every twenty years, not every ten years, as formerly.

The twenty years reappraisement period is considered by many to be too long. It is held that there should be a revaluation every five years. Should land values fall, the lessee is required to pay rents which would not be profitable, while if values increase he obtains values to which he is not entitled. Except for slight variations, as the one just noted, all increases in land values are retained for the benefit of the public. This principle was adopted because it was realized that in the case of other Australian urban centers these increases had been very great and had all been retained by private interests. The site of the city of Adelaide, 1,042 acres, was sold in 1837 for $17,251; in 1937 the unimproved value for state land purposes was $52,800,000. In Melbourne, in 1837, a parcel of land comprising 93½ acres realized $32,496; in 1937 it was valued at $107,111,000.

The population of Canberra increased from 1,921 in 1911 to 10,000 today. As a result, there has been a marked increase in land values. In 1936 the Government reported the total amount provided by the Treasury for the construction, maintenance and administration of the Federal Terirtory from inception to June 30, 1936, had been $63,300,878.

By retaining the freehold, as the Commonwealth has done, and granting long leases for business or residential areas, the profit on ac-

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River Water Supply for Moose Jaw, Saskatchewan

Infiltration Gallery, Pump Station, Canal, Reservoir, and Saturation Area with Recovery by Wellpoints

By A. W. Ellson Fawkes, C.E., R.P.E.
City Engineer,
Moose Jaw, Sask.

THE city of Moose Jaw since its early days has derived its water supply from surface reservoirs and storage, wells and galleries in sand formation. The city has experienced water shortages with their attendant inconveniences and hazards. For decades it has been the dream of the citizens of Moose Jaw to obtain a visible water supply from the South Saskatchewan River approximately 100 miles from the city. Many schemes, surveys and alternates have been advocated, and estimates have been prepared on the various schemes proposed, ranging from $3,000,000 to $10,000,000 capital cost.

In 1938, a definite start was made to bring the waters from the South Saskatchewan River to Moose Jaw under the direction of the Prairie Farmers Rehabilitation Association. The work was undertaken as a co-operative project of the Dominion of Canada, and the city of Moose Jaw.

The Project

The water-storage project known as the Caron water project consists of the construction of an infiltration gallery on the South Saskatchewan River, the construction of a pumping station, an open ditch about 68 miles in length with a storage reservoir, a spreading or saturation area with recovery of the water by wellpoints. These works will be operated by the city of Moose Jaw, with certain restrictions permitting the withdrawal of water by the Dominion as required.

Construction Features

Owing to the large amount of sand carried by the South Saskatchewan River, an intake pipe laid on the river-bed would not have been satisfactory. A crib infiltration gallery was constructed below the water line along the bank of the river for a distance of 500 feet. A double row of interlocking steel sheet piling, 25 feet apart, was driven down to clay, and the ends of the crib were closed. The sand and gravel within the sheet piling was excavated and a timber crib waterway 13 feet wide and 6 feet deep was constructed of 8 x 8-inch timbers for the sides with 1-inch spaces between the timbers. A cover of 3 x 12-inch timbers on edge forms the roof. The space between the outside of the crib and the steel sheet piling was filled with graded gravel, a layer of field rock was placed over the roof, and the remaining height was filled with river sand to the water level of the river, and then the steel sheet piling was withdrawn. This allows the water to flow into the crib from the top, sides and ends. The water flows from the timber crib through a 3-foot square conduit to the well chambers in the pumping station.

Method of Filling the Infiltration Gallery with Gravel and Boulders

The pumping station is of concrete, steel, brick and tile construction located close to the infiltration gallery. The pumping equipment consists of four 335-hp Harland electric motors, directly connected to four Harland 2,600 Imperial gpm pumps operating against a total head of 350 feet. The pumping units will operate 20 to 24 hours per day for 210 days a year. Although there are four units, it is expected that only three will be in service at one time, giving a capacity of 9 Imgd delivered to the velocity-reducing chamber at the upper end of the open canal. The pipe line from the pumping station to the velocity-reducing chamber at the summit of the line is a 3/16-inch steel pipe with an inside concrete spun lining and coated on the outside with a bituminous protective membrane. The pipe is 24

Testing the Capacity of Individual Wellpoints in the Saturation Area

Method of Connecting Wellpoints to the 10-Inch Header

inches inside diameter and 3,800 feet in length.

The canal is approximately 68 miles from the velocity-reducing chamber to the Saturation Area at Caron. The entire length of the canal is fenced, together with a 50-foot right-of-way with the requisite number of bridges and culverts to meet traffic conditions. The canal is 3 feet wide at the bottom, with sloping sides of 1½ on 1, and has a minimum depth of 3 feet 6 inches. The gradient of the canal is such that there is a fall of 175 feet in the 68 miles, with an estimated rate of flow of 1.65 feet per second.

Two miles from the beginning of the canal an earth-filled dam has been constructed. To prevent seepage through the embankment, a tongue-and-groove line of sheet piling was driven to resistance. The face of the dam is riprapped with large boulders and field stone to prevent wind and water erosion. The purpose of this dam is to create a reservoir with a storage of approximately 50 mIg of water. The outlet of the reservoir is controlled by a stop log spillway, so that the reservoir acts as a balancing medium when necessary.

The Saturation Area

The Saturation Area is a 50-acre area at the lower end of the 68-mile canal at Caron. The brush was cut from this land and the topsoil removed to a depth of 2 feet down to the sandstratum. This has a varying depth from 20 to 30 feet and is used for water spreading. The water is extracted from this Saturation Area as needed by the city by means of wellpoints. A 10-inch cast iron inside diameter header pipe was laid 6 feet below the ground surface and with a combined length of 3,800 feet. Connected to this header pipe are 192 wellpoints jetted down to a depth of 20 feet below the header pipe and spaced 15 to 30 feet apart, depending on the test which was made for each individual point. Under test the wellpoints delivered between 10 and 25 gpm each.

The wellpoints are the Griffin Jet'N Drive type, 44½ inches long and 2.6 inches outside diameter. They are equipped with a single ball valve jet head and have bottom suction. They have at least 240 square inches of brass screen constructed of three layers as follows: On the outside is a perforated brass plate inside which is the brass filtering mesh, and within that an inner strengthening wall of corrugated brass plate, mounted on a 1½-inch extra-heavy bottom suction pipe, so that the screen area is unblocked by fluted tubes. This construction gives a self-cleaning water swirl in the screen walls. The wellpoints are connected to the header pipe with 16-foot lengths of 1½-inch diameter extra-heavy galvanized iron pipe. Each point is equipped with valve, saddle and the necessary fitting to make the connection to the header pipe.

It is estimated that the water which can be recovered per day by the wellpoints will be a maximum of 3 mgd. Although the 3,800-foot header pipe is continuous, it is divided into two sections of 1,900 feet each with 96 wellpoints per section. This division of the header pipe is made by a pumping station being constructed across the line. Three valves are installed in the section of the header pipe passing through the pumping station, to give greater flexibility to the system and permit drawing water from one section of the line while the other section is recovering from the drawdown. No wellpoints are installed in the header line within a radius of approximately 300 feet of the pumping station, so that the drawdown of one section will not interfere with the drawdown of the other section of the header line. The method of water spreading and recovering the water by wellpoints in a Saturation Area is unusual for a permanent city water supply, and this is the first installation of

(Concluded on page 74)

Laying New 18-Inch Class C Cast Iron Pipe in the 20-Mile Supply Line from the Saturation Area to the City

Tackling Traffic in Southern Cities

Intelligent Planning Needed in American Cities to Revamp Street Structure for Future Traffic

By CHARLIE BISHOP
Secretary-Manager,
Atlanta Motor Club

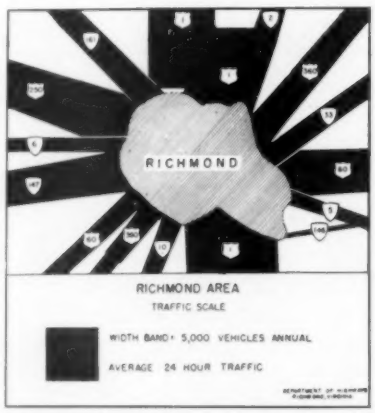
WHEN in the late 1880's the reconstruction of Atlanta got under way, little attention was paid to city planning. So, as the city slowly began to develop into the business center of the South, property owners divided their holdings to suit themselves, with apparently no attempt to lay out a logical, city-wide street plan. As a result, streets strike off at every conceivable angle, come together five at a time, and altogether add up to one of the most difficult traffic problems in the country.

In 1912 the *New York Herald* and the *Atlanta Journal* sponsored a motorcade to chart a route between those two cities. This odyssey was the beginning of a significant movement, the results of which are being felt with increasing strength today, for Atlantans discovered that by owning automobiles they no longer had to live within walking distance of their offices or a car line. The city grew proportionately, until today more people in the Atlanta metropolitan area live outside the corporate limits than live within.

Atlanta, like most other large American cities, is developing a ring of decayed property around its very heart which year by year grows steadily wider as citizens with adequate incomes transfer their residence from the inner city to the suburbs.

The Motor Car vs. the City

This trend has produced three significant results. First, property owners find their holdings becoming less and less desirable as the ring of decay edges toward them. Second, city real estate tax revenues have shown almost a 20 per cent drop over the past decade. Finally, the traffic problem grows increasingly more difficult of solution,



A Traffic Flow Map of Main State Highways Entering Richmond, Va., Graphically Illustrating Why Metropolitan Traffic Has Reached the Point of Complete Congestion

as illustrated in the map above.

It is these urgencies that have caused Southern cities to initiate the changes necessary to relieve pressures generated by the effort to force streams of twentieth century traffic through arteries of the early nineteenth century.

Although it does not reach perfection, an outstanding Southern example of these efforts can be found in New Orleans, where the State Highway Commission is driving the Airline Highway through to connect with Tulane Avenue, a divided-lane, 130-foot arterial street. The new section, limited in access, will have four traffic lanes on each side of a neutral ground and will overpass a railroad, another highway and a canal. When the $750,000 job is completed this spring, it will deliver traffic smoothly, quickly and safely from the outskirts of New Orleans down into the heart of the business district. Similarly a 3½-mile section of Gentilly Avenue, formerly a narrow asphalt street, was widened to a six-lane, divided artery, bringing U. S. 90, the "Old Spanish Trail," into Canal Street and the downtown section.

In Mobile, Ala., the $4,000,000 Bankhead Tunnel will carry the "Old Spanish Trail" under the Mobile River and right up into the business district, cutting out 7 miles of tortuous, narrow streets, relics of the city's early eighteenth century founding. And in Tampa, the newly constructed Bayshore Boulevard, designed for peak-hour loading, carries suburbanites back and forth from the inner city.

The Problem of Right-of-Way

The biggest obstacle to the construction of more of these badly needed facilities is the problem of right-of-way acquisition. Particularly noticeable in Knoxville, Tenn., Charleston, Greenville and Spartanburg, S. C., where modern divided-lane highways carry the motorist up to the city limits and there deposit him in a maze of narrow city streets, it has completely stymied the efforts of most American cities.

Some, like Atlanta, have relocated new entrances in order to avoid the ribbon developments extending far out from city limits on older routes. However, when the new facility does encounter built-up sections, the right-of-way problem again becomes acute. Pressed for funds, states and municipalities have had to limit right-of-way acquisition to the absolute minimum, with the following results:

The newly constructed facility partially defeats its ends, for without excess right-of-way, roadside developments spring up, making it impossible to limit access.

When it is again necessary to im-

prove the facility, adjacent property will once again have undergone a price rise.

This writer, in talking with city and state highway engineers throughout the South, was told time after time that the problem of right-of-way acquisition was the main, and practically the only, stumbling block in the way of extensive metropolitan express-highway construction programs.

Recognizing that this situation is the most difficult facing state, municipal and county authorities, Thomas H. MacDonald, Chief, Public Roads Administration, suggests that the ". . . problem could be greatly simplified and in a large measure eliminated with respect to major highways and streets if there were some central agency with sufficient funds and authority of law to acquire the lands necessary for the improvement of such highways and streets at a period substantially in advance of the time when the improvements actually would be made."

In order to avoid the near-prohibitive costs of metropolitan expressways, it has often been suggested that bypass routes, designed to take through traffic off the city streets, be constructed. However, traffic data gathered by the state-wide highway planning surveys conclusively show that only about 10 to 15 per cent of the traffic on main rural highways wishes to avoid metropolitan areas—a percentage so small that draining it off on bypass routes would afford little or no relief.

There is nevertheless a definite need for facilities of this type. Around large cities and many smaller ones, they would more properly be called "belt-line distribution roads." Such roads have some of the characteristics of bypass routes, and may actually serve to bypass a considerable amount of through highway traffic around the city. Their primary purpose, however, is something different.

Belt-Line Distribution Roads

As previously described, through expressways pick up traffic at the metropolitan rim, carry it into the heart of the city and out to exit points on the opposite side. Belt-line distribution roads, circling the city at its outer fringe or in the decadent section surrounding the business district, serve to distribute traffic approaching the city on any highway either to other highways or to points on the circumference of the city nearest that traffic's ultimate destination.

Bypassing U. S. 80 around Jackson, Miss. The modified cloverleaf taps directly into the business district

Perhaps the most outstanding example of this type of construction is the system of expressways in the New York metropolitan area. Similar in principle, though of course much smaller, is the facility under construction at Jackson, Miss. When completed, this 20-mile project will bypass traffic on U.S. 80 around the city. Tap-roads into the business and residential districts will be provided at 1,000-foot intervals, with a modified clover-leaf crossing at the main access point to the center of town. Divided in construction, the new facility will have two 10-foot traffic lanes on either side of a 20-foot neutral ground. The dividing strip will be narrowed to four feet where the highway crosses grade-separation structures.

A Challenge to Our Cities

As is apparent from the foregoing material, American cities face a tremendous task in revamping their city plans to make room for traffic. At present, intelligent planning is the primary need. Fortunately, the services of the various state-wide highway planning surveys are available to most cities for this work. Through them a definite knowledge of the type, extent and cost of the facilities needed can be determined. But from that point on, it's the city's job, requiring vision and high ability.

The section of U. S. 70 shown at the left dumps 4,000 cars a day into Knoxville, Tenn., city streets—a potent illustration of the need for similar facilities within the metropolitan area. Gentilly Avenue, shown at right, was formerly a narrow street in New Orleans. This improved section carries the "Old Spanish Trail" through the suburbs of east New Orleans directly to the Canal Street business section

The Question of Free Water

The Citizens League of Cleveland Discusses the All-Important Question: "Has the City Authority to Supply a Public Utility Service Without Charge?"

THE question of supplying free water for public and semi-public purposes has been a highly debatable issue in Ohio cities for more than a quarter of a century; and is still being debated, although a number of court decisions handed down since the debates began would seem to have settled the question in so far as the constitution and laws are concerned. These decisions indicate rather clearly that water supplied by a municipally owned and operated utility must be paid for by the consumer, whether it be a private individual, a semi-public institution, or a department of government. That, at least, was the argument presented by the City Law Department of Cleveland as plaintiff in a taxpayer's suit heard by Judge Skeel of the Common Pleas Court in 1938, and decided in favor of the taxpayer.

Opinion of Law Department

The Law Department said in its brief:

"For the reasons and upon the authorities in this brief set forth, the city of Cleveland respectfully submits that there is not now in force and effect any provision of charter, ordinance or rules of the city of Cleveland which could possibly be construed as authority to the defendants to give water free through the avenue of the water works of the city of Cleveland. Furthermore, that if there were ostensible authority granted by statute, charter or ordinance, such would be a clear violation of the constitution of the state of Ohio."

The same opinion, only in different words, was again expressed recently, by the Law Department on a pending ordinance granting free water to semi-public institutions, such as hospitals, churches, etc. The opinions of the Law Department are based largely upon the decision in the Columbus Board of Education case (118 O.S. 295) involving Section 3963 G.C. relating to the supplying of water to public departments and charitable institutions, in which the Supreme Court said:

"Syllabus 2. That portion of Section 3963 General Code above referred to is unconstitutional and void for the further reason that it results in taking private property for public use without compensation therefor, in violation of Section 19, Article 1 of the Ohio constitution."

The Theory and Practice

The theory upon which municipalities are permitted to own and operate public utilities is that the service of such utilities shall be supplied at cost, and that those who receive the services, whether a private or public consumer, shall pay for the service. This service-at-cost principle is clearly implied in the provisions of Article XVIII, Section 12, of the Ohio state constitution which authorizes cities, desiring to own and operate public utilities, to establish them on a self-sustaining basis, which means that they shall not impose any financial burden upon property through taxes. The principle is further emphasized in the Cleveland city charter, which regards these municipal services as self-sustaining utilities.

Cleveland's ownership and operation of public utilities have always been based upon that self-sustaining and service-at-cost-principle. But the trouble has been that the practice of the city has not always been in accordance with the principle. In the case of supplying electric light and power from the municipal light plant, the principle has been, and is being, observed; but in the case of a water supply it is not being and has not been, observed since the self-sustaining service-at-cost principle was embodied in the state constitution in 1912, and in the first home rule charter of Cleveland in 1913.

Prior to 1912, municipalities were authorized by the General Code to supply free water to public authorities and charitable institutions, and to adopt rules and regulations for the management and operation of the Water Department. Back in 1909 the old Board of Public Service did adopt such rules and regulations, one of which (Rule 5) granted free water to market houses, public school buildings, other public buildings and purposes; and to charitable institutions devoted to the relief of the poor and dependent. The amount of such free water to these semi-public institutions and agencies was, however, limited to a definite amount per capita. Any excess over the amount was to be paid for by the consumer.

Municipal Home Rule Made Changes

Most of these state laws and administrative rules and regulations, in so far as home rule cities were concerned in Ohio, were nullified by the adoption of the Municipal Home Rule Amendment in 1912, when Ohio municipalities were given "all power of local self-government" and the right to frame and adopt their own charters. Cleveland did adopt a home rule charter in 1912, in which the people established the principle that the city's public utilities shall be self-sustaining and that public departments shall pay for the water which they use; and in turn the utilities shall pay the city departments for the services which the latter render to the utility department, such as office rental and legal services.

Section 128 of the first charter provided that separate and distinct accounts should be maintained by the city which "shall contain proportionate charges for all services performed for such utilities by other departments, as well as proportionate credits for all services rendered."

The city budgets from 1913 to 1917 complied with the charter provisions in so far as departmental use of water was concerned. The

charter contained no provision relative to free water for charitable institutions, schools and semi-public agencies. It was generally recognized, however, that the Council had the same authority to grant or to refuse to grant free water to these institutions and agencies within the city, which the General Assembly had in all cities operating under the state municipal code. That, however, was prior to the several Supreme Court decisions dealing with this question. But as to free water for the departments, charges were made by the utility department against other departments for water used, and they in turn charged the utility department for services rendered.

Reverts to Old Practice

In *Greater Cleveland*, the weekly publication of The Citizens League of Cleveland, there has been published in considerable detail the history of free water continuing from the point we have described above through the period of the World War, and then under the city manager charter from 1923 to 1931. It was in 1930 that the city administration was forced to face the issue of free water squarely and determine whether or not the practice of supplying free water was legal or illegal.

At that time, the taxpayer requested the Law Department to institute a suit to restrain the Department of Public Utilities from supplying free water. Seven years later, in March, 1937, the case was ordered to trial, but it was continued indefinitely. In July, 1937, another taxpayer took up the action, but in view of an impending municipal election a postponement was secured. Immediately after the November election, seven years after the first taxpayer's request was made, the case was sent to Judge Skeel, and in September, 1938, he handed down his decision, holding:

> "There is now no legal authority by which the Water Department may furnish water either free or at reduced rates to the several departments and public institutions."

He proceeded to enjoin the Director of Public Utilities from longer supplying free water to these institutions and departments. Unfortunately, the important question was still left unanswered: "Has the city the authority to furnish free water to any public or semi-public institution or agency?" The situation has since been further complicated by the Council's refusing to adopt ordinances requiring all users of water to pay for the amount consumed. A taxpayer's suit has been instituted by a firm of attorneys to test the right of the city to supply free water to any consumer, whether an individual, a church or charitable institution, or a department of government. Meantime the utility department will not make collections from the institutions and departments.

Street-Cleaning a Beach

Hermosa Beach, Calif., Increases Interest of Bathers by Removing Debris Every Morning by Machine

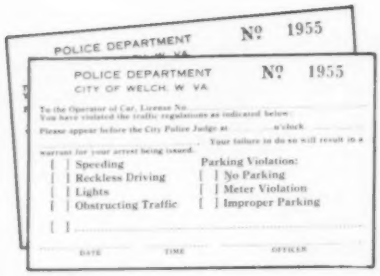
CLEAN streets attract visitors, but when a community's biggest asset is its beach, and that beach is in competition with others of the same kind close by, the community must see to it that it offers a beach-plus. Each year about 6,000,000 persons visit the two-mile stretch of sand at Hermosa Beach, and, estimating that each of these 6,000,000 visitors spends only 10 cents in the city, the total expenditure for the season to local shopkeepers would be $600,000.

This was enough of an argument for John MacCready, Street Superintendent of Hermosa Beach, to set to work to improve the 300-foot-wide beach and insure its cleanliness. He designed a 10-foot rake that would clean the kelp, débris, and other unwanted material from the beach and leave the sand clean for bathers. This "Beachcomber," as it is called locally, is pulled by an Allis-Chalmers WM tractor equipped with a muffler so as not to disturb the citizens, for the outfit goes onto the beach at 4 A.M. and works until noon, by which time the beach is completely raked, as shown in the illustration.

All the seaweed is dragged out into the ocean, where it floats away. The oil which has bothered many Southern California beaches, when it washes ashore from oil-burning ships that clean their tanks offshore, is turned under and buried in the sand by this novel rake. Thus the daily raking of the sand makes it seem whiter and cleaner because of the constant plowing.

The front cover of this issue of THE AMERICAN CITY shows the crowds which enjoy the clean, white sand of Hermosa Beach during the bathing season.

The "Beachcomber" in action at Hermosa Beach, Calif.



By WILLIAM M. HEALY
City Manager, Welch, W. Va.

Light Fines Make Meters Effective and Popular

THE city of Welch installed 186 parking meters on August 25, 1939. Gross collections through May 22 were $10,331.37; average collections per week $266; average collections per meter per day, 20½c. Maximum collections per week were for the week ending December 23, and amounted to $388. For the following week our collections were about $190, which I believe is the minimum. Our average collections for a full year will be somewhat higher than the above, since the winter months show less return than the rest of the year.

A year ago the city was in a serious condition financially, and the parking meter revenue enables us to add one full-time patrolman and three part-time traffic officers to our police force. These additions were greatly needed. For the current fiscal year, ending June 30, no specific allotment has been made of the net revenue from parking meters. It is credited to the General Fund account, to be used for current operating expenses.

Level space is so scarce in the city that we have no vacant lots nor room for parking anywhere except on our few narrow, one-way and congested streets and on a lot purchased by the city a few years ago for the specific purpose of parking cars in order to get them off the streets.

Welch depends upon its out-of-town trade from the surrounding coal fields. This trade normally comes to town on pay-days and Saturdays and very greatly increases the problem of handling traffic and parking on those days.

Despite our attempts to limit the parking time, the normal condition before parking meters were installed was to have every available parking place filled from about 9 A.M. until 6 P.M. daily. Anyone wishing to park had to hunt for a place and considered himself lucky when he found one, even though it was a couple of blocks from his destination.

Meters were installed for the primary purpose of making parking space available, and we have been very well pleased with the results. We have meters that take in 20 cents to 40 cents per week and we consider them fully as important as those taking in 40 cents or more per day.

50-Cent Fine Effective

One patrolman has no difficulty in policing and servicing our 186 meters. I believe that one reason for this is that we have done all possible to enforce our meter ordinance to the letter, feeling that the purpose of a fine is to prevent over-parking and to avoid resentment. We reduced the fine for a meter violation to 50 cents for the first offense, $1 for the second, $1.50 for the third, and $2 for all subsequent offenses. The violator may discharge his case by payment of these amounts to the City Treasurer. (This avoids the necessity of appearing at Police Court.) I firmly believe that the 50-cent fine for over-parking is just as effective as a larger fine and it does not create nearly as much resentment against the meters as if it were more. The big majority pay the Treasurer 50 cents, which avoids filling the Police Court with these minor violations.

Although we have a complete record, we enforce the $1 for second offenses, etc., only in the cases of habitual violators—and these now are few indeed. Here, again, I feel that the nominal initial fine is very effective, and a $2 fine is really effective on the man who comes in expecting to "get away" with paying a lighter fine.

Our traffic tickets make the keeping of records very simple. The tickets are in books and are numbered in duplicate. The duplicate, on heavy paper, is put on the car and the original turned in to the

City Manager's office, where it is held in a suspense file. When the violator brings his ticket to the Police Judge or the City Treasurer and the charge is cleared, we receive that ticket with the disposition of the case noted on it. Then the original is filed in numerical order of license numbers. Thus every ticket must be accounted for, and all violations of every nature charged against any one license number are together in the file. We are interested in the names of only those few who start making a practice of violating, or those who fail to appear.

Probably we should have two types of traffic tickets—one for meter violations stating on the ticket that the charge may be dismissed by payment to the City Treasurer, and the other for real traffic violations requiring attendance at Police Court, although these facts are so well known generally that the need has not been felt.

Prefer 1-5-Cent Meters

We would not exchange our 1-cent-5-cent combination meters for any other type. They give the parker a wide latitude of choice as to time, and the popularity of the 1-cent feature is demonstrated by the fact that our collections regularly include just about as many pennies as 5-cent pieces. The 1-cent feature encourages those who can finish their business in 12 minutes to do so and leave that parking space available to another; also, the privilege of obtaining two hours' parking when desired is, to my mind, necessary under our particular conditions.

I am convinced that any city contemplating the installment of parking meters should make an extremely careful and thorough study of its own particular local conditions and requirements, which certainly will vary, not only from one city to another, but possibly even between different streets or areas in the same city.

Housing Officials Turn Attention Toward "Defense Housing"

APPOINTMENT of a committee on defense housing to advise local public housing agencies and the Federal Government on emergency housing was announced on June 24 by the National Association of Housing Officials. The committee was set up in the belief that the low-cost public housing program will soon have to fit part of its current plans into the building of accommodations for expanded populations in war defense industry towns and Army and Navy post communities. In the latter connection, President Roosevelt has already approved the first of a probable series of United States Housing Authority loans giving $1,305,000 to the Montgomery Housing Authority and $643,000 to Pensacola, Fla., for dwelling units at army and naval air stations.

The "big, general problem," the Association noted in a bulletin to members, "is to start an energetic, flexible housing program closely geared to the manufacturing, shipping and military phases of defense, without destroying or perverting long-term housing objectives and purposes." Although most of the direction and financing of the emergency housing will come from the Federal Government, local housing authorities can contribute valuable information already gathered on housing conditions, site possibilities and other factors, it was pointed out. Where local authorities have been established and are properly staffed, they should be able to provide the complete machinery for construction and management. "Coordination locally of housing efforts with other parts of the defense program will demand more and more attention. A large-scale, high-geared defense program will affect directly not only housing but schools, public health, public works and other local activities."

In 1917, when there were no local housing authorities, the Federal Government had to create a Bureau of Industrial Housing and Transportation, later the United States Housing Corporation, to supervise emergency housing for war industries workers and others. Appropriations totaling $150,000,000 were made to this agency in 1918. Its program had to be undertaken on the basis of securing little more than quick survey information of the conditions.

The National Association of Housing Officials' special committee is headed by C. F. Palmer, Chairman of the Atlanta Housing Authority, and President of the Association. Other members are Edward Weinfeld, State Commissioner of Housing, Division of Housing, New York; Miles Colean, in charge of a special housing study for the Twentieth Century Fund, and until recently Assistant Administrator of the Federal Housing Administration; Ernest J. Bohn, Executive Director, Cleveland Metropolitan Housing Authority; and Carleton F. Sharpe, Community Manager of Greenhills, Ohio.

Strict Fireworks-Control Laws in Effect in Eight States on July 4

STATE-WIDE fireworks-control laws effective on July 4 for the first time this year in Delaware and Indiana bring to a total of eight the number of states which will practically prohibit the private use of pyrotechnics on the holiday, the Council of State Governments reports. The state-wide legislation, which in many cases replaced a scattering of municipal fireworks-control ordinances easy for fireworks bootleggers to evade, is looked upon generally as an improved means of reducing fireworks accidents. Injuries from such accidents totaled more that 5,500 last July 4. In 1938, they numbered 7,933; in 1937, 7,205. The other six states with strict fireworks-control laws are Iowa, Michigan, New Jersey, Pennsylvania, Utah and West Virginia. New York State will join the "prohibitory" group after August 1, when a measure enacted in the 1940 legislative session becomes effective.

All these laws are based on a model proposed by the National Fire Protection Association. Provision is made in the laws for properly supervised public displays, for which a permit and bond to cover possible personal injury and property damage are required. In addition, California and Wisconsin are considered to have fairly effective fireworks-control laws. More than 30 states, also, have various kinds of "regulatory" laws, ranging from permission granted local governments to treat the problem "as they see fit," to restrictions on the type or size of fireworks, and limits on when and where they may be sold. Six states have no state-wide fireworks legislation at all. They are Arizona, Georgia, Missouri, Montana, Nevada, and North Carolina.

The prohibitory type of fireworks-control law has shown itself effective during its first year in a majority of the states adopting it. Pennsylvania, which made the law effective last year, reduced fireworks injuries from 1,702 to 85, and deaths from 6 to none. Utah's fireworks injuries declined from 18 to 5 upon first application of the law last year, and West Virginia's from 41 to none. Iowa, whose law became effective in 1938, showed a decrease in injuries from 76 to 6.

Court Upholds Prohibition and Removal of Projecting Signs

Esthetics Recognized as Proper Basis for Exercise of the Police Power

By ALBERT S. BARD
Counsel, National Roadside Council

PLANNERS and their friends who believe that planning, zoning and regulation of private property may constitutionally be based upon esthetics and on the values inherent in the good appearance of towns, may now chalk-up an additional mark as the result of a decision by Justice Hooley of the New York Supreme Court in Nassau County. In *Preferred Tires, Inc. v. Village of Hempstead*, 173 Misc. 1017 (decided March 28 and reported in *Advance Sheets*, June 1, 1940; also 19 N. Y. Supp. (2d) 374), Judge Hooley sustained an ordinance of the town of Hempstead, Long Island, which prohibited all types of vertical signs in the village and also all other signs which project from the face of any building over any sidewalk or street in the village, and required the removal of all such signs at the end of a period of slightly over one year from the enactment of the ordinance.

The plaintiff in the case sought an injunction to prohibit the application of the ordinance to his property upon the grounds, among others, that the ordinance is both unreasonable and unconstitutional, in part because it made an exception in favor of projecting signs upon hotel and theater marquees.

Judge Hooley sustains the ordinance, including its exceptions, notwithstanding its so-called "retroactive" effect or application to existing signs.

He found the ordinance to be based both upon public safety and upon the promotion of beauty in the village, but added:

"This Court is not restricted to esthetic reasons in deciding to sustain the validity of the ordinance in question, *but if it were so restricted, it would not hesitate to sustain the legislation upon that ground alone.* The Court cannot believe that, with the Legislature of the state specifically delegating the power to regulate or prohibit signs in the public streets, a municipal board in this day and age can be so restricted, as plaintiff contends, in thus promoting the happiness and general welfare of the community."

Beauty a Factor in the Public Welfare

Judge Hooley further comments:

"The village of Hempstead would be far more beautiful if, upon its business streets, all of the present signs, placed in different positions, at different heights, of different shapes and colors, were completely eliminated from the public eye, and instead there was presented a clear and unobstructed view in which ugliness had been replaced by the symmetry and architecture of modern business buildings.

"For years the courts have strained to sustain the validity of regulatory or prohibitory ordinances of this character upon the basis of the public safety. They decided that esthetic considerations could afford no basis for sustaining such legislation. Such considerations were deemed to render an ordinance of this character unconstitutional. But the views of the public change in the passing of years. What was deemed wrong in the past is looked upon very often today as eminently proper. What was looked upon as unreasonable in the past is very often considered perfectly reasonable today. Among the changes which have come in the viewpoint of the public is the idea that our cities and villages should be beautiful and that the creation of such beauty tends to the happiness, contentment, comfort, prosperity and general welfare of our citizens. The zoning regulations, which have been upheld by our courts, indicate the changes in the attitude of the public and the courts with respect to the right of a man to use his own property. He must now consider to some extent the interest of his neighbors and the interest of the community in general. The courts should not be so bound down with ancient precedent that they should close their eyes to every change."

This opinion of Justice Hooley strengthens the doctrine now gaining recognition in the courts that esthetic considerations are inextricably woven into the value of private property, the interest of the community in the subjects of taxation, good planning, and the right of the public to have the amenity of places preserved for its enjoyment—in short, that esthetic considerations concern the public welfare and that good appearance may be made the basis of restrictions and regulations under the police power, whether by zoning or by simple regulation.

A California Decision Recalled

This newest opinion recalls the decision in *Monterey County v. Bassett* reported in a note in the December, 1938, issue of THE AMERICAN CITY (p. 89), where Judge Dooling of the California Superior and Appellate Courts upheld the constitutionality of a county ordinance designed to protect the natural beauty of the San Simeon Highway along the California coast. That decision overruled a demurrer interposed by the defendant attacking the constitutionality of the ordinance. The case recently came on for trial, and a further decision may be expected soon.

Although both these opinions are by courts of first instance, both refer to the new attitude with respect to esthetics as a basis for the exercise of the police power, and both decline to follow the old unrealistic doctrine that communities may not plan for appearance and may not impose esthetic restrictions upon private property.

A further comment by Judge Hooley carries the inference that he thinks the dissenting opinion of Judge Finch in the Troy billboard case (*Matter of Mid-State Advertising Corporation v. Bond*, 274 N. Y. 82) was right and that the majority in the New York Court of Appeals was wrong—a criticism and opinion with which the writer of the present note thoroughly agrees, and said so at the time in a note published in THE AMERICAN CITY for January, 1938.

4,500,000 Public Employees

The Quarterly Employment Survey of the Department of Commerce for the First Quarter, 1940, issued June 7, estimates the total number of all units of government in the nation at the end of January, 1940, at about 4,500,000, exclusive of persons on work relief or hired by contractors. The monthly payroll of these governmental employees is estimated at $550,000,000.

For local governments, the total number of *non-school* employees is estimated at about 1,500,000. This total includes counties, cities, towns, townships and other civil divisions.

Garland's Rich Uncle— The Municipal Electric Plant

By H. B. Gieb
Consulting Engineer,
Dallas, Texas

UPON the completion of the Garland municipal water works, in 1922, the city was required to pay 2 cents per kwh for electric energy for pumping. Owing to the necessity of a deep-well supply of water, which required a large amount of energy to raise the water from the well to the storage tank, the electric power bill for water pumping amounted to more than the amount of money collected from the sale of water. To obtain a more economical source of electricity, a 75-hp diesel electric generating unit was purchased on a "Time-Payment-Plan"; the amount of each payment being the difference between the prior cost of energy, and the cost of operating the diesel unit (including salaries, labor, fuel, lubricating oil, and maintenance). The savings soon liquidated the debt.

Ten local business men, noting how economically electric energy could be generated in a local plant, requested the City Council to enlarge the plant and construct a distribution system through the business district. The Council was unable to grant the request, because of a lack of finances. Thereupon, these ten business men signed personal notes with the local bank in the total principal amount of $16,000, and loaned these funds to the city for the purpose of constructing the system. The notes were liquidated out of net revenues in four years.

As more customers were added, additional equipment was purchased, all bought from net earnings. In 1929, an offer of $250,000 was refused.

Profits earned during the last ten years have improved the Streets, Water, Sewer and Fire Departments. Net earnings have reduced the city tax rate from $1.50 to $0.75 on $100 valuation (valuations are based upon 30 per cent of actual value).

When the plant was placed in operation, there were only 4 streetlights; today there are 103 street lights, and over 700 awning lights are furnished free to the citizens.

The electric plant has furnished funds for the payment of interest and principal of water and sewer bonds, for the purchase of fire-fighting equipment, and for part of the operating cost of the municipal government. All these benefits have been achieved without any Federal aid or grants.

Until 1930, the electric generating plant derived its energy from one 150-hp and two 100-hp semi-diesel engine units requiring one gallon of fuel oil to produce 7.3 kwh. In 1930 a 240-hp full diesel unit was installed which increased the operating efficiency to 9.1 kwh per gallon of fuel oil. Rapid growth of the city, lower electric rates, and more consumers necessitated the installation of additional generating capacity. In May, 1939, a 575-hp, 2-stroke-cycle, pump-scavenging diesel unit was installed, and one of the 100-hp semi-diesel units was removed from the plant. Today, the total plant capacity is 1,065-hp, generating 11.75 kwh per gallon of fuel oil.

Builds Sewage Plant

The growing city needed adequate facilities for the treatment of sewage. To finance the cost of a treatment plant, revenue bonds secured by the net revenues of the electric system, and to be paid solely from these revenues, were sold at a net interest rate to the city of 2.65 per cent per annum. The alternative would have been either to increase the sewer tax from 25 cents per month per connection, or to issue tax bonds, thus increasing taxes. Garland is keeping its money at home.

In Competition

Throughout, the electric system has been in competition with the largest public utility system operating in Texas. In 1922, this power utility was charging for domestic electric service 15 cents per kwh. The maximum rate of the city today is 10 cents per kwh, and the average cost per kwh for the average

From 0 to 2,550 Population

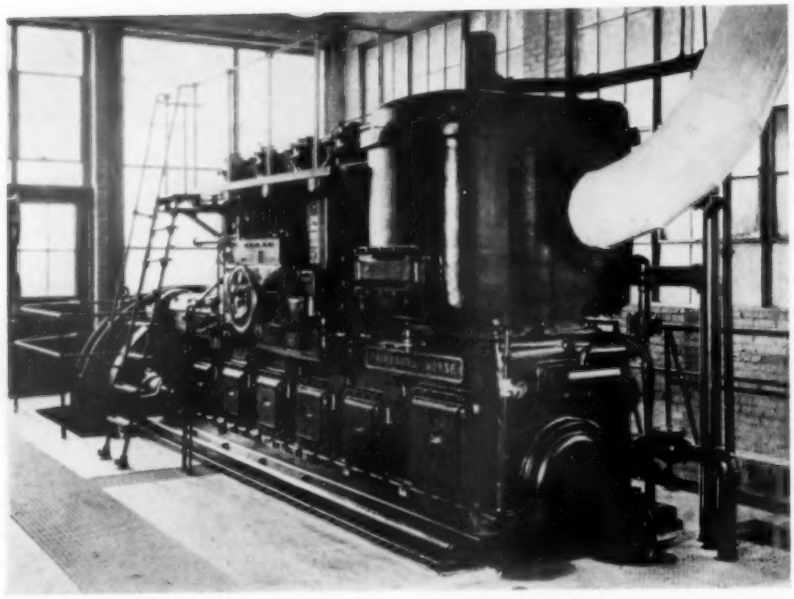
IN THE EARLY HISTORY of Dallas County, Texas, a small village sprang up on the banks of Duck Creek, 15 miles northwest of Dallas. The usual appurtenances of a Texas village were established—cotton gin, blacksmith shop, general store, post office and implement dealers. Mail was brought from Dallas on horseback three times a week, before railroads.

By 1886, a flour mill had been established, a schoolhouse and a masonic lodge constructed, and mercantile establishments had turned the village into a town. In the fall of that year the Gulf, Colorado and Santa Fe, and the Missouri, Kansas, and Texas, built extensions which crossed about a mile northwest of the little town on Duck Creek. There was much rejoicing over the advent of the railroads, and the merchants prepared at once to move closer to these lines. The M. K. & T. constructed its depot near the crossing of its line with that of the G. C. & S. F., and retained the name of Duck Creek, while the Santa Fe constructed its depot a half-mile south of this crossing, and named it Embree. The *Duck Creek Rustler* became the *Embree Enterprise*.

Indeed, it seemed certain that the new town of Embree would supplant Duck Creek. However, a few strong and popular Duck Creek citizens remained in their old Creek-side locations. A new townsite was opened contiguous to the M. K. & T. railroad depot, and was named Duck Creek.

As a result of these two rival towns drawing from and depending on the same territory for their existence, old-time friends became bitter enemies, and a few were carrying pistols. The two local papers were leading the fight. In 1888, the Duck Creek "Warriors" invited Honorable Joe Abbott, Congressman for the District, to visit the towns and make a survey of the situation. As a result of this survey, the post office situated in Embree was moved to a point half-way between the two railroad stations, and the name changed from Embree to Garland, in honor of the then Attorney-General of the United States, Hon. A. H. Garland, of Arkansas. These changes were accepted by the townsfolk of both Embree and Duck Creek. Business moved into Duck Creek territory, and the Santa Fe railroad moved its station to a point near the new post office. The former business section of Embree became residential territory.

The town of Garland grew rapidly until Thanksgiving Day, 1889, when fire destroyed half the business houses. Reconstruction in brick started immediately on a well-designed plan. Today, the city has an efficient government and the financial asset of the profitable municipal electric plant described here.



Inside the Garland, Texas, Diesel Electric Plant

Diesel generating equipment—Fairbanks, Morse & Co.
Oil clarifiers—Briggs
Oil coolers—Schutts and Koerting
Exhaust and intake air silencers—Maxim
Governors—Woodward
Fuel oil filters—Nugent
Switchboard—General Electric Co.

consumer is 3.85 cents per kwh. The private utility has maintained under competitive conditions a flat rate of $1.25 per month for domestic lighting, and a flat monthly rate of $3.50 for lighting and refrigeration. In addition to this drastic competition, refrigerators and electric ranges can be rented by private-utility consumers only, for a monthly rental of 10 to 25 cents. At present, the municipally owned electric system has 98 per cent of the total business, and the private utility 2 per cent.

Accurate records of operation and maintenance costs are kept, and revenues and expenses for the last six years were as follows:

Charles Newman, chief operating engineer of the electric plant, has been connected with the system from the first day of its operation.

The consulting engineering firm of H. B. Gieb & Co., Dallas, Texas, is retained by the city of Garland, and both the electrical improvements and the new sewage-treatment plant were designed and the construction supervised by this firm.

When in 1939 a large hat manufacturing factory, then located in Dallas, decided to move its factory to a smaller town, so as to obtain better labor and living conditions, Garland was in a position to furnish the required electric energy at less than 1 cent per kwh and thus secure the new industry. Garland is on the lookout for other attractive industries.

For Period Ending June 1	1934	1935	1936	1937	1938	1939
Total gross revenue*	$20,116	$18,721	$24,546	$23,369	$28,263	$27,640
Total expenses†	12,227	14,589	15,421	16,794	19,135	14,867
Net income	7,888	4,131	9,124	6,575	9,127	12,772

* No charge made for electric energy used for water pumping, street lighting, or in churches, schools and public buildings.

† Included in these expenses are transfers of funds used for purposes other than the operation of this electric utility system.

FINANCIAL STATEMENT
as of May 15, 1939

Assessed valuation 1938		$1,028,740
Total bond and warrant debt	$53,970	
Less: interest and sinking-fund, cash	4,147	
Net bond and warrant debt		49,823
Ratio of net debt to assessed valuation		4.84%
1930 U. S. Census population		1,584
1939 estimated population		2,550

Note: The above statement of indebtedness does not include $60,000 revenue bonds issued and dated June 15, 1939. These revenue bonds cannot, by Texas law, be considered a debt of the city of Garland.

265 Cities Have City or City-County Hospitals

More Than 322 accredited municipal hospitals are owned and operated by 265 American cities, according to a report soon to be published by the International City Managers' Association in the 1940 Municipal Year Book. Operated as local governmental services, the hospitals have a total of about 80,000 beds and admit more than 1,200,000 patients a year. The Association said 55 of the 322 hospitals are operated jointly by cities and counties, and that all are registered by the American Medical Association.

In classifying the hospitals, the report listed 249 as "general," 38 as "tuberculosis," 14 as "isolation," and 4 as "tuberculosis isolation." The remainder are classified as to special type of service rendered—emergency, maternity or convalescent. Only two cities—New York and Atlanta—operate cancer hospitals.

Of the total number of municipal hospitals, New York City operates 20, or nearly half of the 48 owned by cities of more than 500,000 population. Fourteen of New York City's hospitals are general. St. Louis and Pittsburgh, with 5 and 4 hospitals respectively, follow New York City. City hospitals are owned by 18 cities in the 200-500,000 population class, by 24 cities in the 100-200,000 class, 41 cities in the 30-100,000 class, 50 cities in the 10-30,000 class, 5 cities in the 5-10,000 class, and 60 cities of less than 5,000 population.

The average number of beds per hospital varies greatly according to population groups. The 48 hospitals owned by the 12 cities of more than 500,000 population average 946 beds per hospital, with the average becoming smaller in the lower population groups. The 60 hospitals owned by cities of less than 5,000 population average 74 beds per hospital.

Although the majority of municipal hospitals have been built since 1900,—42 of these since 1930,—a few cities have been operating hospitals for more than two centuries. Philadelphia's general hospital was established in 1732, and four years later New York City established Bellevue Hospital—one of the best-known of city hospitals. One of Cleveland's city hospitals was established in 1837. Of the total, about 75 municipal hospitals began operation before 1,900.

The report showed that 29 of the hospitals are approved for general internship training, 31 have accredited schools of nursing, and 39 are approved for both internship and schools of nursing.

Cleveland Relighting

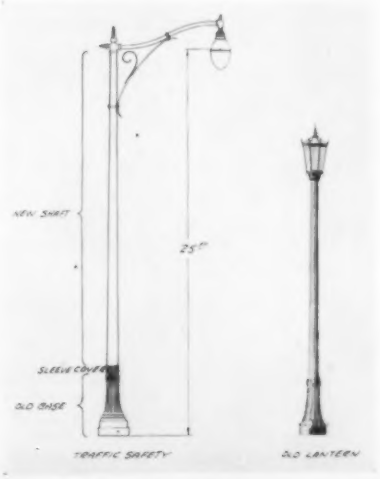
By W. F. White
Manager, Westinghouse Electric & Mfg. Co., Cleveland, Ohio

OVER the five-year period 1931-35, 49,313 major felonies were reported in Cleveland,—9,863 crimes per year,—or a crime every 53 minutes! Traffic accidents totaled 12,374 per year, 225 fatal. In December, 1935, Mayor Harold H. Burton appointed Eliot Ness Safety Director. Ness possesses a mind able to penetrate. Soon he introduced to Cleveland the complete system of radio patrolling which he described in THE AMERICAN CITY for December, 1939. Now 60 scout cars and 7 detective cruisers offer Cleveland citizens 24-hour protection.

In a recent interview, Ness related a few of the major factors that a community must analyze before acquiring a good safety record. His first remark emphasized the urgent need for better street lighting: "Modernized street lighting would reduce street accidents, fatalities, purse-snatching, and thousands of petty street crimes. Since two-thirds of our accidents and felonies happen at night, the logical solution of our problem is to light up, at least on our main thoroughfares. Automobile manufacturers have progressed with the times, but street lighting in most larger cities is still in the Dark Ages."

Night vs. Day

Today, modern automobiles are operated at higher speeds than they were twenty years ago. The vibration and jolts which warned the motorist of excessive speed in the older cars have been removed and, except for an occasional glance at the speedometer, the modern driver is not conscious of excessive speed, nor does he realize the vital relationship between speed and visibility distance. This relationship between automobile speed and visibility distance must be thoroughly interpreted for the motorist and pedestrian alike before any appreciable progress is made in night accident control.



The American Road Builders' Association recommends a daytime visibility distance of 1,800 feet for average highway travel. Since the same hazards are quite as likely to be present at night as in daylight, it is safe to assume that the same visibility distance should prevail at night. Unless the motorist reduces his highway travel speed to less than one-half, the 32-candlepower headlamps are too weak for safe night driving. Public authorities responsible for traffic safety can increase driver visibility distance by the installation of traffic safety lighting, with fewer night accidents.

Cleveland Lighting Obsolete

Twenty years ago Cleveland enjoyed an enviable reputation as the most completely lighted city in the United States. Some 7,000 Cleveland lanterns were widely recognized as the acme of better street lighting. Today "obsolete" better describes this antiquated equipment. Most Cleveland public officials felt, as Ness did, the acute need for a better system of lighting. They realized that modern traffic safety lighting would simplify most accident and crime problems confronting the city government, but they were hampered by lack of municipal appropriations.

Cleveland is mounting modern traffic safety luminaires 25 feet above pavement and obtaining the good visibility shown here

Such was the city's problem when Chief Electrical Engineer Jack Johnston and his assistant, Walter Scove, decided to find a solution. After many weeks of experimenting, with the aid of Westinghouse engineers and metal consultants, they designed an extension pole for the support of new pendent luminaires. This shaft, fastened on the old base, raised the unit to 25 feet above and 6 feet over the street. Since the old base and the same installation cable were retained, the unit could be made available at one-third the cost of a new installation. It was one of the first big steps in the city-wide program for better street lighting.

Relighting

Experimental installations of the new luminaires and extension shafts satisfied city engineers and proved that at 25-foot mounting height these new pendent luminaires would reduce blinding glare to a minimum and increase driving visibility 250 per cent. Within a year 11 miles of the new lights have been installed.

City officials are endeavoring to make Cleveland one of the safest cities in the world and have already won first place honors in Group 1 in the 1939 nation-wide contest conducted by the National Safety Council. A plan is now underway for relighting most of the main thoroughfares with traffic safety luminaires.

New York City's Transit Opportunity

AN EXTENDED controversy over transit unification in New York City was ended in June, when the city government assumed full responsibility over the entire rapid-transit system. On June 1 it started operating the Brooklyn-Manhattan Transit Corporation subway and the subsidiary Brooklyn & Queens Corporation street-car and bus lines, and on June 12 the I.R.T. subway and the uncondemned elevated lines of the Manhattan Railway Company.

The purchase price of the B.M.T. and the I.R.T. systems will total $300,000,000 to $325,000,000. The total investment in the entire city-owned transportation system, consisting of 700 track miles of rapid transit, 437 track miles of street railway and 80 miles of bus routes, is placed at $1,500,000,000; gross debt about $1,137,000,000, which sinking-funds reduce to about a billion net debt. Interest charges amount to $40,000,000 per year. Total annual travel amounts to 2¼ billion revenue passengers. The investment amounts to 60 cents per revenue passenger.

The city acquires full title to this comprehensive city-wide system at the moment when all the types of mass-transportation vehicles are at peak practical development. While the street car has never been popular with the present city administration, it may be presumed that the possession of 1,230 of them including 100 of the modern Transit Presidents Conference Committee cars will impel close study of the rejuvenated trolley car in the borough of the pennant-striving Trolley Dodgers. This car is in successful operation, judging from the record of re-orders, in 14 cities, and its principles of quiet, ease, comfort and trim appearance have been copied into recent designs of rapid-transit cars. These are the factors which, with frequent service, attract rides—the mark of successful operation.

New York certainly has an interesting opportunity to show its people and visitors, and thereby the other large cities, what modern city transportation can be. Four major means for achieving this are:

1. Down-to-the-track financing.
2. Complete up-to-date record of costs.
3. Broad-gage operating policies.
4. Fitting the service to the needs and comfort of the riders.

Last issue of poster long familiar to New York subway riders

New York City now owns 100 latest type (P.C.C.) street cars in the Borough of Brooklyn

Claremont Profits By Relief Project

Low-Cost Projects Include House Numbering, Tree Surgery, and Several Needed City Maps

By HARLAN H. EDWARDS
City Engineer,
Claremont, Calif.

A Tree in Claremont Saved Through Surgery

CLAREMONT, CALIF., the home of Pomona, Scripps and Claremont Colleges, a residential city of 3,000 population and 3.71 square mile area, has largely completed a program of low-cost civic improvements, using WPA labor, which has provided to date the following:

1. House numbers, street names and block numbers have been painted on the curbs.

2. A city-wide house number map has been made.

3. Street trees have been given a thorough trimming, thinning and surgical treatment, diseased and dead trees being removed and new ones planted.

4. Existing city maps have been brought up to date, and various permit records have been worked over to establish a more usable permit and plan record filing system.

5. A completely indexed subdivision map file has been built up by obtaining copies of all county records pertaining to Claremont, and a similar file of deed records of street and other public property acquisitions and vacations has been made.

6. A complete system of elevations and elevation monuments has been obtained by an elevation survey from known U. S. points.

7. A complete random-line survey has been made recording the apparent centerlines of existing streets, and is being used as the basis for securing topography and other data to support the establishment of true street centerlines.

8. The above data are being used to make a cadastral map of the city, referenced to points in the city and vicinity on the county's precise triangulation network, to be a part of an ultimate county-wide cadastral map. This project is now operating under the general and technical direction of the County Surveyor.

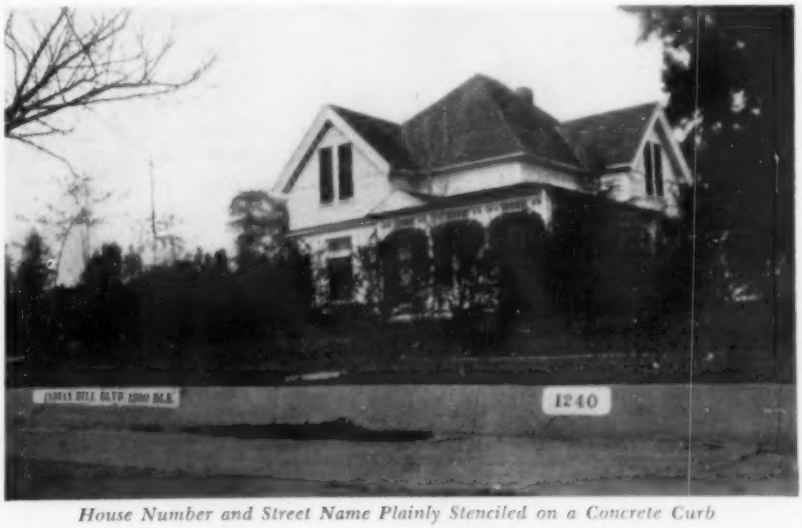
9. The above map will be used as the base on which a utility map will be made, showing all gas, water, sewer and other underground lines, points of house connection and location of houses.

All the foregoing items, of inestimable value to the city's future growth, have been done at a total cost to the city of approximately $600, exclusive of the use of city-owned equipment and the services of the City Engineer, who was responsible for the conception and execution of the program. Other projects of a construction nature are not mentioned here, since they are of a different type, requiring major outlays for materials and equipment rental and having to be financed from special funds.

House Numbers

For a city that does not have an adequate system of visible street names and house numbers, particularly in those areas not subject to the snow-obliteration of curb faces in winter, the stenciling or painting of the names of the streets (as, for instance "Berkeley Ave. 1100 Blk.") on all the faces of the curb at each intersection, together with the numbers of houses on the curbs directly in front, is greatly appreciated by the traveling public. Future house numbers established by estimate for vacant property, and likewise placed on the curb, provide a complete system so far as possible. Costs of materials are of minor consideration, totaling in Claremont's case $10, the balance being supplied by WPA as its non-labor contribution. Outside aluminum paint was used for the background, and black stenciling paste for the numbers, though the more recent modern traffic lacquers may prove still more permanent.

After having the numbers placed on the curbs, it was a simple task for a man to record the numbers,



House Number and Street Name Plainly Stenciled on a Concrete Curb

with their location along the street, and then spot them properly on an existing city wall-map in the office. Black numbers designated houses, and red numbers vacant property. This map is a most useful one and is constantly referred to for various purposes. It cost the city about 25 cents for ink, since the map itself was already on hand.

Tree Surgery

Thriving street trees are among a city's greatest assets and should be adequately maintained by a continuous program of attention. Claremont, however, like many other cities, had allowed the trees to just grow up, trimming only when necessary to clear traffic. As the result of the top-heavy condition, numbers of the shallow-rooted trees were blown over during windstorms that followed periods of rain, or large branches were broken off owing to excessive load and rot.

In the tree project, one of the first things done was to thin out and properly shape the tree. This lightened the top load considerably, allowed room for light and air, and made the portions where decay existed more accessible. Tree surgeons then cut out this termite-infested material down to clean wood, cauterized the surface with creosote and sealed it with asphalt emulsion. Where the rot was down in a pocket, drainage was provided by drilling at least a 2-inch hole downward to the outside. Trees that were too far gone to save were removed and replaced by new trees of the type required by the uniform street tree ordinance, the tree being furnished by the adjacent property owners. In many cases trees that did not conform to the ordinance were removed and the proper ones planted.

It is interesting to note the much more healthy and attractive appearance of the trees after several years, and also the fact that practically no trees have been lost by rain and wind since the project was completed. The principal costs involved were those of truck use, new surgery equipment, rope and ladders. Deducting truck and driver time and the use of other city equipment that would have been used anyway in the usual trimming operations each year, the net additional outlay by the city for a very beneficial work was $350. Reducing this somewhat was the approximate sum of $150 that was realized from the sale of wood delivered to the local woodyard in log form and cut up by private labor.

City Maps and Records

The last six items in the list are concerned with the reorganization and bringing up to date of the records and maps of the City Engineer's office, and are what might be termed "white collar jobs." Typists, clerks, laborers, surveyors, draftsmen, computers and civil engineers were all used in various portions of the job to good advantage, giving to the city maps and record equipment, survey points, etc., in complete and accurate form—quite a contrast to the inadequate equipment and meager data originally existing.

The first step in the program was the performance of field work in connection with the establishment of a correct City Datum and a system of elevation monuments throughout the city. Fortunately, several U.S.G.S. points existed not far away, the elevations of which were ascertained for reference. Accurate primary levels were run from these bench-marks through the city, establishing control monuments of concrete buried in the parkway strips away from the influence of expanding sidewalks and curbs. From these monuments other lines of levels were run, establishing similar points at each street intersection and elsewhere when such was considered desirable. This portion of the project has already proved its worth in the reduction in survey time necessary to prepare plans for paving or sewer work.

At the same time, office forces were indexing all maps, field books and other data existing in the office, bringing up to date the existing maps showing various building zones, sewer layouts, etc. A fire-zone map, hitherto much needed but not available, was made, and the new streets and subdivisions were entered on all maps on hand. Knowing, then, what data were at hand in the office, men were detailed to check our records against those of the County Surveyor and Assessor, and copies of all maps not already possessed were either obtained by blueprinting or by copying from the record, together with copies of deeds, street easements, dedications and vacations, to create a city file complete in every way, indexed alphabetically and by location.

Copies of building, plumbing and electrical permits had previously been kept only in numerical order in book form not indexed in any way. Unless one knew the original permit number for the work in question, reference to it was impossible. A new system has been devised whereby copies of all permits for one house are filed in a single open-top envelope which is indexed alphabetically according to street and house number. In this way the complete construction and alteration record or history of any property is immediately available for reference, and the valuable data contained in the permit books are utilized.

Surveys

The work now progressing makes use of a random-line traverse survey of apparent street centerlines (which was made following the elevation survey) as the base on which to build the data of a general topographic survey (excluding contours) which is recording the location of all property stakes when known or found, all trees, sidewalks, curbs, houses, fence lines and other pertinent data that might have a bearing upon the true location of street centerlines through their relation to accepted private property lines. The base triangulation of the survey was completed and checked with the County Surveyor's later measurements over several of the courses, with a maximum error of 1 in 20,000.

As this work is completed and put on the maps, decision on the centerline location will be made in conference with the County Surveyor and the Engineer for the Title Insurance company, both of whom are vitally interested in the project. After this time, then, it will be possible to monument the true street centerline intersections accurately, thus finally establishing

(*Concluded on page 74*)

Milk-Product Wastes in City Sewage

The Greenville, Ohio, Plant Has a Good Three-Year Record for Settling and Sprinkling Filter Operation

By E. H. Reece
City Engineer, Greenville

IN 1900, a sanitary sewer system was first constructed in Greenville, Ohio, discharging the raw sewage into Greenville Creek just beyond the eastern limits of the city. Greenville, with a population of 7,900, is located in the central western part of Ohio in the center of a rich agricultural and dairy section.

The flow of Greenville Creek is comparatively low during a large portion of the year. This condition, coupled with the fact that the sewage contributed a heavy pollution load, formed the basis for several damage suits against the city, filed by property owners along the creek for several miles below the sewer outlet. They claimed that the pollution extended through their lands, creating a health hazard and making the water unfit for consumption by their stock. In 1935, consulting engineers were employed to make a study of conditions and prepare plans and estimates for a sewage-treatment plant to be constructed under a 45 per cent PWA grant, the city providing the balance. In their report, the engineers suggested three possible methods of treatment in the order of their suitability: (1) sedimentation with separate sludge digestion and trickling filters, followed by secondary sedimentation; (2) sedimentation with separate sludge digestion and aeration by the activated sludge process, followed by secondary sedimentation; (3) chemical precipitation with separate sludge digestion.

The most serious problem which faced the Greenville plant was the treatment of industrial wastes, principally from milk-product plants, the waste from which contributes a very large biochemical oxygen demand, and is difficult to treat because the offending material is in solution and cannot be even partially removed by sedimentation.

The New Plant

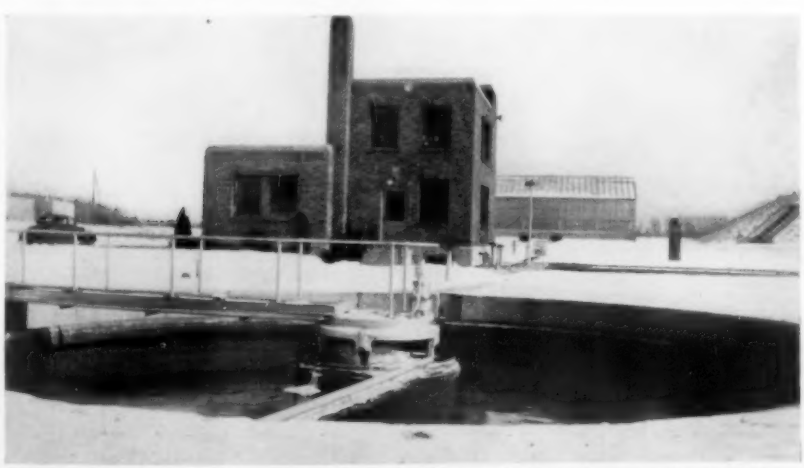
A sewage-treatment plant was finally designed with a capacity of 1,000,000 gallons of sewage per day, using sedimentation with mechanical removal of the sludge and the use of chemicals at times when the load demanded or odor and pH control were necessary, separate sludge digestion and trickling filters followed by secondary sedimentation. Construction of the plant started in 1936, and it was placed in operation in March, 1937.

From the sewer system of the city, two 15-inch mains converge in a chamber about ¼-mile distant, and on the opposite side of the creek from the plant. The sewage then flows through an inverted siphon beneath the creek to another chamber on the same side of the creek as the plant, and thence by gravity through a 21-inch main to the upper portion of the control chamber on the bank of the creek near the plant. The sewage then flows by gravity to the comminutor and to two mixing tanks.

The mixing tanks are of concrete each 15 feet wide, 26 feet long and 8½ feet deep, in which the sewage is agitated by rapidly moving paddles. When considered necessary, hydrated lime is added for pH and odor control. Prechlorination is also used prior to the passage of the sewage through the comminutor.

Two preliminary settling tanks, each 15 feet wide, 44 feet long and 8½ feet deep, adjoin the mixing tanks. From the settling tanks the sewage flows into a wet well from which it is pumped by three 550-gpm pumps to the trickling filters, two of which are constructed and in service, with provision for the future installation of two more filters when required. Each filter is of concrete construction with a diameter of 102 feet and contains 8 feet of slag filter media. The sewage is distributed over the slag by means of revolving arms.

From the filters, the sewage flows to the final settling tank, which is of concrete, 35 feet in diameter and with a depth of 8½ feet at the outside and 9¾ feet in the center. The final settling tank is equipped with a Dorr sludge-removal mechanism. From the final settling tank the



The Greenville Sewage-Treatment Plant, Showing a Clarifier, the Operating Building, Covered Sludge Beds, and a Portion of the Digester

The Glass-Covered Beds at the Greenville, Ohio, Sewage-Treatment Plant

clear effluent flows to the lower part of the control chamber and thence to the outfall in Greenville Creek about two hours after it has entered the plant.

Sludge Digestion

The sludge is pumped from the settling tanks to a digester 40 feet in diameter and 19 feet deep, with a fixed cover and equipped with a Hardinge digester mechanism. As sludge is pumped into the tanks, the supernatant liquor drains back to the mixing tanks and joins the flow of raw sewage entering the plant.

During digestion the sludge is heated to a uniform temperature of 90°, and the accumulated gases are drawn off and used to heat the water which circulates through the digester heating coils and also for heating the building during the winter.

Four glass-covered sludge beds adjoin the digester, each bed being 20 feet wide and 57 feet long. As digestion is completed, the sludge is pumped into these beds; and when it has dried, the material is used around the plant and in adjoining territory for fill.

Results and Costs

After nearly three years of operation, the results obtained at the Greenville sewage-treatment plant have justified the selection of the type of plant built. During 1939, a total of 196,324,000 gallons of sewage was treated, a monthly average of 16,360,000 gallons. During 1939, 3,409,300 cubic feet of gas was produced, and 2,774,400 cubic feet was used in the operation of the plant. Laboratory tests showed an average 5-day B.O.D. removal of 92.2 per cent at a chemical cost of $3.77 per million gallons.

Personnel

The operating personnel consists of three regular operators and one relief operator. As the plant is in operation 24 hours per day, these regular operators work in 8-hour shifts, the relief operator assisting the regular operators three days of each week. Each regular operator is allowed one day off each week, during which his place is filled by the relief operator. In addition to his other duties, the City Chemist acts as supervisor of the sewage-treatment plant and the municipal water filtration plant as regards chemical treatment. H. P. Jones & Co., consulting engineers, Toledo, Ohio, designed and supervised the construction of the Greenville sewage-treatment plant.

Tax Delinquency in Blighted Areas

FIGURES released in New York last month confirm the general belief of students of urban problems that taxpayers throughout a city must shoulder heavier tax burdens because of the continued existence of slum sections. These figures and the charts here reproduced appeared in a report of the Investment Housing Committee of the Citizens' Housing Council of New York. At a luncheon meeting of the Committee, of which Mrs. Samuel I. Rosenman is Chairman, Luther Gulick, as head of the subcommittee on research and studies, presented the results of the committee's investigation into tax delinquencies in the 13 areas of Manhattan recently designated by the City Planning Commission as suitable for clearance and replanning.

Considering only the properties that have paid no taxes for three years or more, Dr. Gulick reported that proportionately there is owing to the city 2½ times as much in delinquent taxes on property in the 13 blighted areas as for Manhattan as a whole. In point of numbers of parcels, the real estate in the 13 blighted sections has almost doubled the ratio of tax delinquency of that of Manhattan as a whole.

In announcing the results of the tax-delinquency study, Mrs. Rosenman pointed out that it was the second of a series undertaken by her committee to ascertain the costs to taxpayers, investors, business, the municipal government, and the community at large involved in the continued existence of these large blighted sections. Some weeks ago, Mrs. Rosenman's Committee made public the results of a study of foreclosures, and forthcoming reports will cover other aspects of maintaining these run-down areas. The tax-delinquency study was directed by Mrs. Sylvia W. Stark.

Copies of the combined report on "Tax Delinquencies and Mortgage Foreclosures in Manhattan's Blighted Areas," an 8-page mimeographed analysis, are available at 10 cents each on application at the office of the Citizens' Housing Council of New York, 470 Fourth Avenue, New York.

CHART 1

TAX DELINQUENCY RATIO
PER CENT OF PARCELS DELINQUENT
TO TOTAL PARCELS

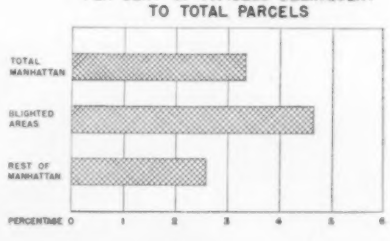
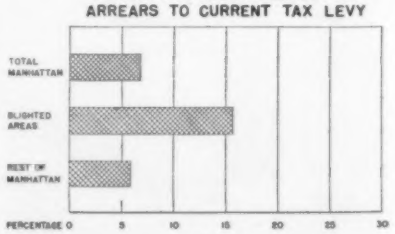


CHART 2

PERCENT OF ACCUMULATED TAX
ARREARS TO CURRENT TAX LEVY



SOURCE:
CITIZENS' HOUSING COUNCIL - TAX DELINQUENCY STUDY

Centralized Control of Equipment Makes Council a Wiser Boss

By R. E. Riley

Commissioner of Finance, Portland, Ore.

THE Department of Finance of the city of Portland, Ore., has completed a detailed listing of all city-owned equipment and is now maintaining a perpetual inventory for these purposes:

1. Basis of an equipment ledger for the city auditor.

2. Means of control of the purchase, use and disposition of equipment by the City Council and its administrative officials.

These objects are important, as not only is the purchase and maintenance of equipment one of the largest items of operating expense; but the kind of equipment in use, and its availability when needed, in a large measure determine public satisfaction with the services.

The inventory record and equipment ledger have been combined and punched into tabulating cards. Each piece of equipment has its card giving a number, the name, department number, ledger number, purchase date and cost. All inventory records are obtained from these cards. They are run through the International Business Machine tabulating equipment at the rate of 80 cards per minute in preparation of reports in any form.

The foregoing identifying figures, however, do not constitute anywhere nearly all the information which is available for each piece of equipment. Other identifying data, typed on the card as shown, cover the exact location of the equipment, vendor's name, manufacturer's serial number, voucher number. In addition, there is a technical description of the item. For instance, for shelving, the description may be: "Steel, closed type, 36 inches wide x 87 high and 30 deep, eight plain shelves 36 inches wide x 30 inches deep, with back." Another class of information shows the disposition of equipment after it has been included in the inventory, for it may be transferred, traded in or broken up for its parts.

The present ledger classifications are:

1911. *Blueprint, Photograph, and Photostat Equipment.*—Equipment necessary to produce blueprints and photostats, as well as auxiliary equipment pertaining thereto.

1912. *Communication and Signal Equipment.*—Equipment used to effect voice or symbol communication or to signal, including telegraphic; telephonic; teletype transmitting, receiving and generating; radio transmitting, receiving, and generating; and traffic signal, etc.; and auxiliary equipment pertaining thereto.

1913. *Education and Recreation Equipment.*—Equipment peculiar to and used in connection with school and classroom work, athletic and recreational activity, and auxiliary equipment pertaining thereto, whether or not in connection with schools, gymnasiums, playgrounds, or recreational centers.

1914. *Engineers' Equipment.*—Equipment peculiar to, used by, and in connection with the work of, an engineer, such as compasses, drafting machines, levels, transits, draftsman's tables, plan files, and the like.

1915. *Fire-Fighting and Life-Saving Equipment.*—Equipment peculiar to or in regular use in the course of fighting fire and saving lives, and auxiliary equipment pertaining thereto.

1916. *Golf-Course and Park-Maintenance Equipment.*—Equipment peculiar to, or in regular use for, golf course and park construction and maintenance, and auxiliary equipment pertaining thereto.

1917. *Heat, Light, and Power Equipment.*—Equipment used in generating in providing heat, light and power, and auxiliary equipment pertaining thereto, when such is of portable nature, or not integral to another object of equipment or of land buildings and other structures.

1918. *Household and Institutional Equipment.*—Equipment generally used in the home or institution for the personal care, comfort, and convenience of people, excepting equipment included under "1919, Laundry Equipment"; "1922, Dental Laboratory, Medical and Surgical Equipment"; and "1924, Office Equipment."

1919. *Laundry Equipment.*—Equipment used to wash, dry, starch, press, dye, smooth and iron textiles.

1920. *Livestock Not for Slaughter, and Livestock Equipment.*—Livestock used for working, breeding, or exhibition purposes, including zoological specimens, and not intended to be slaughtered; and the equipment peculiar to, and used for, the care and employment of such livestock.

1921. *Marine Equipment.*—Equipment peculiar to, and used for, water navigation and transportation, but not including that necessary to its construction, repair, and maintenance, whether the latter be afloat or ashore. This classification does not include fireboats, which are to be classified under "1915, Fire-Fighting and Life-Saving Equipment."

1922. *Dental, Laboratory, Medical and Surgical Equipment.*—Equipment peculiar to the work of, and used by, dentists, laboratory technicians and scientists, therapeutic practitioners, and surgeons.

1923. *Motor-Vehicle Equipment.*—Equipment operated on land, propelled by a self-contained motor and used for transportation of freight or passengers, including street-cleaning motor vehicles but excluding fire-fighting motor vehicles, which are to be classified under "1915, Fire-Fighting and Life-Saving Equipment."

1924. *Office Equipment.*—Equipment regularly used for the convenience and comfort of persons while making, keeping, and handling records, and equipment used to make, keep, handle, and store records.

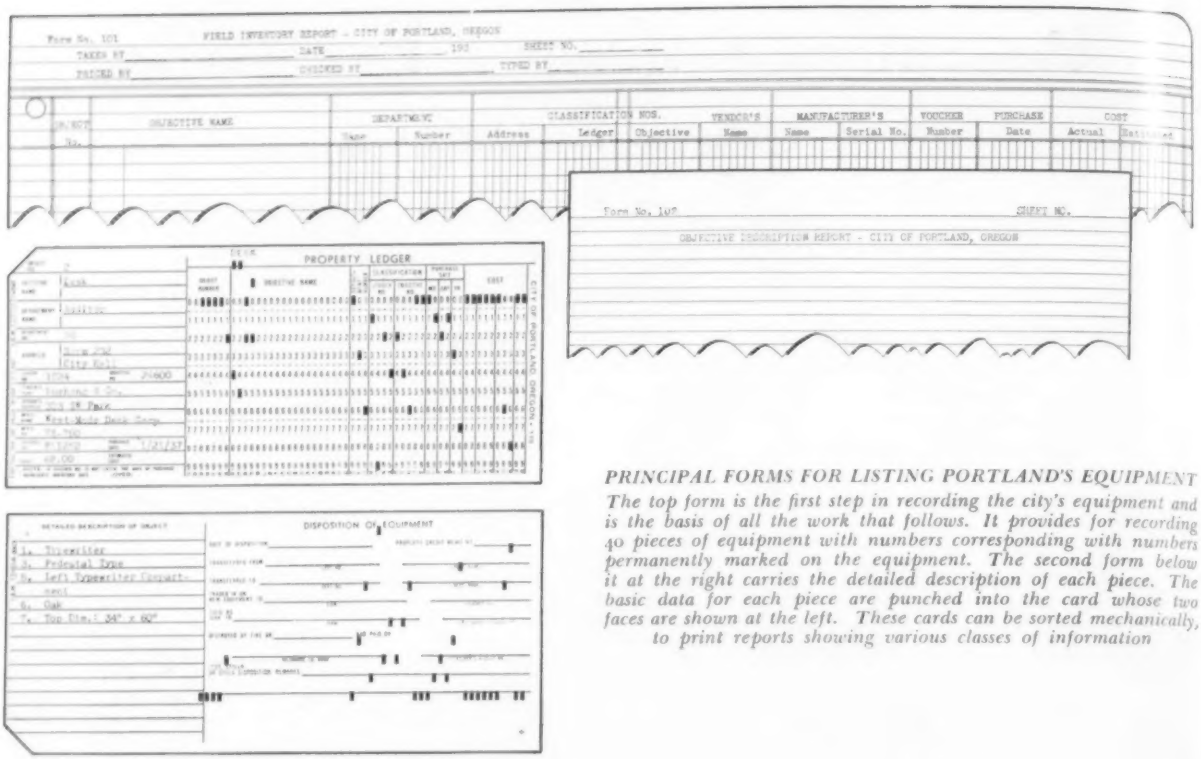
1925. *Ordinance and Restraint Equipment.*—Equipment designed for, and used as, weapons for the infliction upon persons of disabling injury or death, and equipment used for the prevention of infliction of disabling injury or death by weapons; and also equipment for the manufacture, repair, and maintenance of both of the former, and special equipment for the manufacture of supplies for weapons. This ledger classification also includes equipment used for the bodily restraint of persons by attachment to their bodies, impairing freedom of movement.

1926. *Construction and Maintenance Equipment.*—Equipment designed for, or regularly used in, the construction, maintenance, and repair of roadways for vehicular and pedestrian traffic, buildings, bridges, dams and other structures, sewers and water-mains, but excluding equipment classified under "1928. Shop, Hand, and Power Tool Equipment."

1927. *Rock-Crushing and Quarry Equipment.*—Equipment peculiar to, or exclusively designed or used for, rock crushing and quarry operations.

1928. *Shop, Hand, and Power Tool Equipment.*—Equipment used in carpenter shops, paint shops, blacksmith shops, machine shops, garages, and workshops of all kinds, excluding such tools as would be barred by the rules given under Section X, Sub-section C, Determination of Equipment to be Inventoried, and the list appended thereto.

The basic Inventory Department form is No. 101 shown here, and it, together with Form 102 for a detailed objective description, is the original record of all city-owned



PRINCIPAL FORMS FOR LISTING PORTLAND'S EQUIPMENT
The top form is the first step in recording the city's equipment and is the basis of all the work that follows. It provides for recording 40 pieces of equipment with numbers corresponding with numbers permanently marked on the equipment. The second form below it at the right carries the detailed description of each piece. The basic data for each piece are punched into the card whose two faces are shown at the left. These cards can be sorted mechanically, to print reports showing various classes of information

equipment. When these data have been transferred by typewriter and key punch machine to the tabulating cards known as Form 205, and these cards sorted by departments, locations, name of equipment in alphabetical order, and object number in numerical order, the work of inventory compilation by this department has been completed.

The forty-five or fifty thousand pieces of equipment included in this inventory record and equipment ledger may be classified mechanically in any particular order, and a report prepared in printed form by machine directly from the punched tabulating cards at the rate of 4,800 cards per hour, or 80 cards per minute. The economy of time and money in the preparation of reports makes this inventory record and equipment ledger most practical, and in addition there is mechanical assurance of accuracy of transcription.

Maintenance of an equipment inventory is mandatory by the city charter, and this method of combining inventory record and equipment ledger on the same tabulating cards brings a new measure of usefulness for such records with hitherto unknown completeness, accuracy, speed of compilation, and economy of record preparation. Another important item is that it enables the Auditor to establish an accurate proof of loss in the event that fire destroys such equipment. From the Auditor's standpoint, equipment is only one step removed from cash and should be so treated.

Another advantage of this inventory record and equipment ledger will be to provide administrative officials with direct control of all equipment by means of timely equipment information. They will be released from dependence upon the judgment and initiative of minor officials and employees and will be in possession of the necessary information for making fullest use of all equipment. They will thus be able to effect uniform standards of modernization and efficiency, with resultant budget economy and better public service.

Some bad equipment conditions existing in the absence of administrative inventory control which this inventory is designed to remedy should be mentioned. Without this control, necessary public services are curtailed by lack of equipment, while this same needed equipment may lie unused and even unwanted in possession of another department.

In other instances departments duplicate purchases of part-time or seasonally used equipment when their period of use does not coincide. This system will enable both departments to use the same.

It also frequently happens that some departments manage to obtain unnecessary equipment in disregard of the greater needs of other departments. In such cases the operating expenses of those departments not so fortunate are unnecessarily increased owing to the use of an excessive amount of obsolete and worn-out equipment.

Used equipment is traded in on new and a loss taken when it might be transferred to some other department where it would perform satisfactorily. This practice would often save the expense of purchasing additional new equipment.

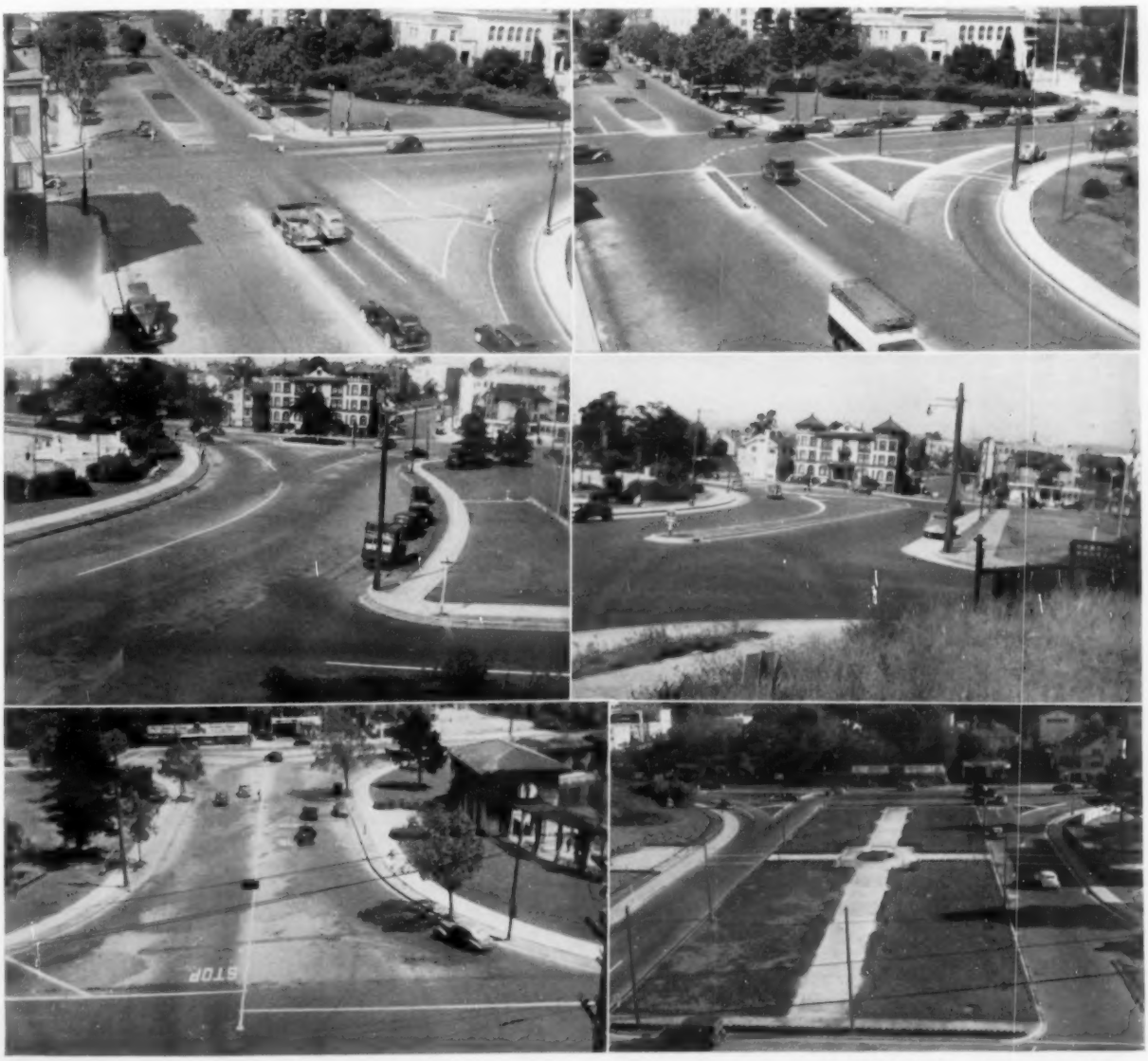
The advantage to the City Council of the centralized control of equipment provided by this inventory record and equipment ledger must not be overlooked. It will be an effective and direct means of enforcing equipment policies and retrieving actual control from an indefinite number of departmental officials and employees. The Council will have knowledge of the general equipment situation which the bureau heads might well be unaware of, and thus bring about a more effective use of funds.

Building Safety into Streets

By John G. Marr
City Planning Engineer, Oakland, Calif.

WE all assert that there are too many deaths and personal injuries resulting from traffic accidents. In Oakland between 1932 and 1940—eight years—650 persons were killed and in addition 15,802 persons were injured. Can we say that the public safety and welfare are being maintained when such a waste of human resources is permitted? The financial losses represented by these deaths and injuries is a substantial sum which, in the final analysis, is paid by the general public. It is believed that these economic losses can be reduced, and many of the accidents can be avoided, by the application of engineering methods to selective police enforcement and by emphasizing the need for building safety into the street structures, combined with continuous educational efforts emphasizing the need for public cooperation.

Because of the nature of the problem, complete coordination between the enforcing agency, educational organizations and engineering is an absolute necessity. No one of these approaches, working independently, can completely solve the problem of establishing effective safety. Working together, with a reasonable amount of public support, definite results can be assured. You have all attended numerous discussions at which the part played by the enforcing and educational agencies has been emphasized. The engineers can make a material contribution toward building safety into streets and in other ways help to reduce the traffic death and injury rates.



From Left to Right, Across Page—"Before and After" Views of Three of Twelve Channelization Jobs Which Now Permit Continuous Movement of Oakland Traffic with Increased Safety

What Caused the Accident?

In formulating a direct method for aggressive attack on this municipal problem, it is necessary to know the extent of the problem, the pattern of accident distribution, and the other factors involved. Every city should undertake to analyze its distribution of accidents over the past several years. It should also keep current records indicating the pattern of accidents as they are occurring. The police reports should place more emphasis on the fundamental cause of the accident. This is not always adequately reported. From studies of this type in Oakland, certain general conclusions were arrived at and certain actions were taken. The results are just beginning to return dividends in lives saved and, although it is too early to make any definite estimates, it is believed that it is possible ultimately to reduce deaths and injuries by one-half, or 30 to 40 persons killed, as opposed to an annual average of 65 during the last 10 years.

Temporary Expedients

The accident-prone locations are mainly at street intersections. The most accurate index of the safety of an intersection is the current accident records. The information available in the Police Department files is constantly referred to by the engineers assigned to handle Oakland traffic problems. As soon as any intersection indicates a building-up of accidents, all the records are searched and the type and time of accident are indicated on a collision diagram. This is followed by a field inspection. Then whatever action is deemed necessary is taken promptly.

Normal complaints, requests for change, and suggestions, are handled in the same manner. All matters pertaining to traffic are handled by one agency irrespective of the department of the city to which they are directed, so that they will be considered from the enforcement angle, and from the several engineering phases as represented by the Electrical, Street, Engineering, and City Planning Departments. The heads of all these city departments and certain civic agencies constitute the Traffic Committee of the city of Oakland.

In the fundamental approach to the solution of traffic problems, the Traffic Committee has accepted three definite premises: (1) traffic must move expeditiously; (2) the maximum degree of safety must be assured, consistent with moving the traffic; and (3) private property must be used with a reasonable degree of facility.

Beware of Don'ts

One school of thought, in the belief that safety must be the only consideration, has gone so far as to construct dips at intersections to force traffic to slow down or suffer the consequences of its oversight, and has installed stop signs and traffic signals in abundance. Such reasoning has done more to scrap organized safety campaigns than any other single factor.

What is needed is a fresh attack directed toward moving the traffic loads on the limited street space, and planning the necessary express highways economically conceived at the strategic locations.

Numerous temporary expedients have been resorted to in Oakland in trying to arrive at a balanced engineering program as follows:

1. *Regulatory Devices.* — Stop signs and traffic signals, when located in accord with the criteria outlined in the Manual of Uniform Traffic Control Devices, serve a very useful purpose. When located on *the basis of pressure* without justification, they can do more to foster disrespect for the traffic regulations than almost any other measure. The removal of stop signs and traffic signals requires considerable intestinal fortitude. It has taken not less than one year to get rid of one such signal and a group of stop signs. The responsibility must rest upon the agency recommending such action, and that agency or individual must trust in a kind providence that the factor of coincidence will not locate a serious accident at that particular intersection until such time as the public has been convinced of the soundness of the recommendation in removing the sign or signal.

2. *Warning, Caution and Direction Signs.*—Signs, placed with discrimination, can do much to facilitate traffic movement, particularly at points where the physical conditions might be confusing to a stranger. The tendency to create a forest of signs not only is confusing, but tends to offset the value of all.

3. *Channelization Structures.*—Oakland recently constructed twelve channelization projects as an experiment. The main objective was to avoid the establishment of additional traffic signal installations and to test out the theory that it was possible at certain locations to handle the traffic load better by providing for continuous movement. A year's experience shows a material reduction in accidents; the structures do not shunt traffic to other routes, and they do keep traffic in definitely restricted paths of movement. The radius of curvature, except for right-angle turns, is not less than 100 feet. The lighting was placed so that all separators facing traffic were given ample illumination. Where constructed in the outlying parts of the city, sodium-vapor lights were used as a warning that the motorist was approaching an intersection where caution should be exercised.

Reflectors were built in the curb returns at all points facing toward the approaching traffic. The curbs were constructed of white cement to increase night visibility and avoid the cost of continuous painting.

The volume of traffic passing through the intersections illustrated by the accompanying photographs has increased 10 per cent over the volume of two years ago.

Through the cooperation of the Park Department, the city is carrying on experiments to determine what type of planting is most effective. In order that visual clearance may be maintained at a maximum, all planting is kept close to the ground. Informal and formal treatments are being tried. Plant material requiring no maintenance, and masses of color requiring more expensive care, are being tried. No conclusion has been arrived at as to what final scheme will create esthetically pleasing channelizations capable of handling the traffic.

4. *Lighting.*—In the event that an unusually high accident frequency is recorded during the night time, more light is generally the answer. Considerable sums of money have been needlessly expanded in the installation of ineffective "lighting." The same expenditure, if the pavement surface had been properly illuminated, would undoubtedly have saved the lives of numerous pedestrians.

The Police Department now segregates the accidents recorded on the spot maps by day and night incidence. It is expected that sections of the major thoroughfares experiencing night accidents will be lighted experimentally to determine the effectiveness of adequate illumination in reducing the number of night accidents.

Directly related is another experiment in which the city is replacing a number of its old yellow safety zone indicators with a new type of aluminum casting faced with red and white reflector buttons. After a year in place, the experimental bar is still functioning most effectively. The experiment is being expanded to include the entire length of one street.

5. *Painting and Prohibited Parking Areas.*—On streets of limited roadway width the painting of channel lines has reduced the amount of weaving and fostered a freer flowing move-

ment. Channelizing lines are used at practically all signalized intersections, and on narrow streets. The use of prohibited parking areas is also extensively used at signalized intersections, both on the approach side and on the far side, to permit quick and easy break when the signal changes. The use of prohibited parking areas in maintaining visual clearance is most essential, and probably will be more generally applied in the very near future to intersections having stop signs.

Long-Time Planning

The experiences gained in handling particular problems are being incorporated in the city's program of long-time planning. All readjustment in present pavement widths and design of new streets and thoroughfares is being reviewed by the traffic engineering division.

It appears obvious that there must be a change in the fundamental concept of street planning, as exemplified by the present street pattern, if the cities are to move traffic with safety. The number of intersecting streets must be reduced. The city is contemplating the creation of one express highway, with more to follow. Separator strips will be sufficiently wide to permit cars turning off to be fully protected in the front and rear. The added width in the separator strips at the intersections can be used at a later date, should grade separations be undertaken.

The Traffic Committee experiment being undertaken in Oakland affords a direct coordination of the city's efforts in handling the immediate problems and in caring for the future. Subdivisions, as they are submitted, are considered from a traffic standpoint as well as from the usability of the land for the purpose for which it is being laid out. The use of abutting land for business purposes can offset a street widening for facilitating traffic movement. The tie between the City Planning Commission and the Traffic Committee again helps to hold to a minimum the amount of property opened up to business use after a new highway is constructed.

This building-in of safety for the present and for the future is a most challenging problem. Much can be done if the engineer will work in cooperation with the enforcing agency and the educational organizations. Success or failure will be dependent upon our ability to solve the personal equation involved in securing the necessary cooperation.

—Presented at the Western Public Works Congress.

Assets Back of City Securities

INVESTORS who are considering the soundness of municipal securities do not always realize that back of these securities are both the taxing power of the city and the value of its assets as a municipal corporation. The amount and importance of such assets, in the case of the city of New York, were pointed out in a recent letter from Mayor F. H. LaGuardia and Comptroller Joseph D. McGoldrick to former owners of securities of the transit companies taken over last month by the city government. To quote in part:

"After all, a municipal corporation and a business corporation are similar in many respects. The services of a municipal corporation are entered into as a matter of civic necessity or of public convenience. The city endeavors to promote in every way the safety, health, comfort and happiness of its residents and to afford every reasonable aid in the efficient and profitable conduct of private business. Thus, the city of New York owns and manages a water company, a transportation company, a ferry company, a sewage and garbage disposal company, hospitals, aviation fields, beaches; in fact, in respect to the sources of its revenues it is highly diversified. This is quite apart from its duties, among many others, in the preservation of law and order, of traffic regulation, of furnishing a complete school system having as adjuncts libraries and art, scientific and other museums. . . .

"In order that you may have a bird's-eye view of New York City from an investment standpoint, we want you to see that while the city of New York has outstanding bonds and corporate stock (for they are one and the same thing), the city as a municipal corporation owns property which may be estimated to exceed twice the amount of the debt outstanding. Among its assets—a transportation system will represent an investment of approximately $1,400,000,000; a water system costing more than $533,000,000; 20,000 acres of parks and playgrounds having a valuation in excess of $1,200,000,000; a school system consisting of 697 elementary and high schools, 76 vocational and technical schools and colleges, costing more than $518,000,000. The city owns more than 300 miles of water frontage, including 294 piers. The city owns 58 bridges, 26 public hospitals, 5 public beaches and 2 aviation fields. In fact, in the conduct of municipal business it owns or leases more than 4,000 buildings and employs more than 150,000 people.

"Now, while the city derives direct revenue from many undertakings such as the water-supply system, the subways, ferries, piers and markets, the fundamental basis for the security of New York City obligations upon which the taxing power rests are the wealth and the earning power and the income of private business and 7,500,000 residents. A few indicative statements are revealing. For example, there are more than 32,000 manufacturing, jobbing and wholesale businesses in the city, the value of whose products totals more than $5,700,000,000 annually. The annual turnover of retail stores is more than $3,250,000,000. The subways in New York City carry more than 1,900,000,000 passengers annually. There are 665,000 buildings in the city; building construction typically exceeds $350,000,000 annually. Through the Port of New York there are yearly shipments and receipts of 60,000,000 tons, while railroad shipments and receipts exceed 130,000,000.

A Municipal Demonstration Irrigation Farm

THROUGH THE DEVELOPMENT AND OPERATION of a demonstration irrigation farm on 240 acres of city-owned land, Alliance, Nebr., hopes to perform a service of value to agricultural development throughout the district as well as to promote the welfare of the city, recent information to the International City Managers' Association shows.

Although the farm is an experimental project, and a public service unique in local government, it is expected to pay for itself through the sale of seed and market produce. Experimental projects on the farm, directed by a former supervisor of a Nebraska State Experimental Farm, will include water application studies, development of special strains of plants for seed purposes, and studies of grass adaptation under irrigation. Part of the farm program—including the planting this year of 20 acres of potatoes—will be carried out in cooperation with the Nebraska Certified Potato Growers' Association, according to reports. This Association will help plant, cultivate, harvest and market the crop.

Many cities operate farms in conjunction with their homes for the aged, workhouses and poorhouses.

Malaria and Drainage Ditches Combined Effectively

Engineering and Health Departments Merge Drainage Activities for Economy and Efficiency in Memphis

INSTEAD of the Engineering Department's continuing to dig drainage ditches on one side of a street and the Health Department's digging and lining malaria-control ditches on the other side, the two departments in Memphis, Tenn., now cooperate. All work is done by the Engineering Department but is inspected by the Health Department to insure that the details necessary for handling dry-weather flows without ponding are carefully constructed.

Development of Design

The earliest lined ditches, built in 1933, had only the center of the bottom of the ditch lined, and then on about one-sixth of the total mileage the banks were protected with sod. This resulted in the ditch scouring on either side of the lining and leaving the lining above the bottom of the ditch. The next step was to pave the remainder of the ditch bottom with riprap composed of old broken concrete from construction jobs throughout the city, and from dumps, which greatly reduced the material cost to the city. This method proved so successful that this same type of riprap has been used for complete ditch lining.

Some of the original flat-bottom ditches which were lined with riprap clogged up and created mosquito-breeding places, which led to the installation of the V-shaped concrete lining with riprap shoulders for all ditches. This results in a self-cleaning ditch where the gradient is 1 per cent or more, provided there are adequate outlets and good alignments.

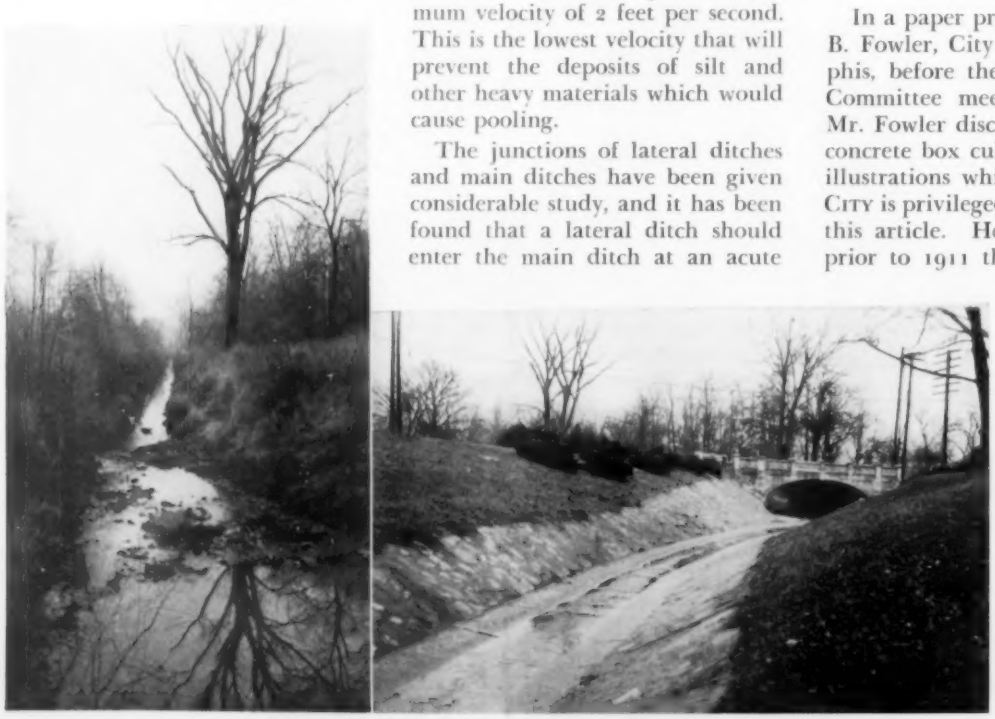
The narrow V-shaped channel in the center of the ditch is now designed to produce a mean depth of flow sufficient to give a minimum velocity of 2 feet per second. This is the lowest velocity that will prevent the deposits of silt and other heavy materials which would cause pooling.

The junctions of lateral ditches and main ditches have been given considerable study, and it has been found that a lateral ditch should enter the main ditch at an acute angle in a downstream direction and at about 1 foot above the flow line, so that the water spills down into the main ditch. This prevents water from being impounded in the lateral owing to deposition from heavy flows in the main ditch.

The problem of expansion joints became a serious one. Bituminous expansion joints are liable to extrude in warm weather, forming miniature dams and consequent pooling. On the other hand, if the joints are left open, vegetation soon comes up, with similar results. In smaller ditches, however, it has become the practice to omit expansion joints. An experimental work is under way to determine the best way of pouring the main ditches without expansion joints.

Design of Concrete Box Culverts

In a paper presented by William B. Fowler, City Engineer of Memphis, before the National Malaria Committee meeting in Memphis, Mr. Fowler discussed the design of concrete box culverts and used the illustrations which THE AMERICAN CITY is privileged to reproduce with this article. He pointed out that prior to 1911 the general practice



Improving the bed of Cypress Creek in Memphis, Tenn.: at left, the stream below Poplar Boulevard, with some straightening; and, at right, above the boulevard, with the bottom paved, and the slopes with riprap sodded above

in Memphis was to construct concrete box culverts with flat bottoms. (See top of third column.) This type of culvert, which is still standard design in many parts of the country, had no special provision for dry-weather flow. The wide flat bottom permitted the accumulation of silt and débris to such an extent that the dry-weather flow had to seek a channel through the sediment, with resultant pockets and pools. Such a condition not only created breeding places for mosquitoes but also seriously reduced the capacity of the culvert for carrying flood waters.

About 1911, the city of Memphis adopted a parabolic section for box culvert bottoms. This next step in the evolution of the concrete culvert served to partially concentrate the dry-weather flow in the central portion of the bottom. On the smaller culverts the result was satisfactory, while on the larger and wider areas there was still some of the same trouble that was characteristic of the flat bottom. Exhibit B shows a cross-sectional view of the box culvert with a parabolic bottom.

Structurally, this design is better than the flat-bottom design, inasmuch as it places the reinforcing steel to a better advantage. The straight bars in the bottom are close to the inside face at mid-span so as to provide reinforcement for the positive bending moment, and near the outside face at the corner to provide reinforcement for the negative bending moment.

The steel at the top corners was carried around the corner on the outside face to make these corners fully rigid. During the later years, the design has been modified to make the bottom corners fully rigid by bending the bottom steel upward on the outside face of the side walls. In January, 1938, after observing the action of the open ditches developed for malaria control, the Engineering Department again revised the design for concrete box culverts. This latest product is shown in Exhibit C.

The point of variance is again the shape of the bottom. In this design specific provision has been made for the dry-weather flow by providing a circular invert 3 feet wide and 6 inches deep in the center of the culvert bottom. From the edge of this culvert, the bottom slopes upward to the side walls at the rate of 3 inches rise per foot. This has been made standard in all sizes. Structurally, the bottom still has the characteristics of a slab, and the first step in design so treats it. The central portion, or invert, is then checked for arch action, and then the portion between the invert and the side wall is investigated as a cantilever, fixed at the corner with a uniform load plus the concentrated load of one-half the invert section at the junction with the invert section. All four corners of this structure are reinforced against negative bending moments, and the structure is entirely rigid.

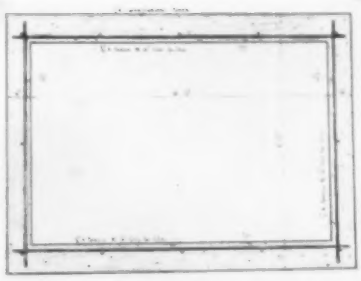
The purpose of this design is to provide a dry-weather or low-water channel to concentrate small flows so as to provide, as nearly as possible, a self-cleaning culvert with the bottom sloped to deflect all deposits towards the center channel. With this design it is possible to carry the same bottom section through open ditches and closed culverts.

Mr. Fowler further points out that, obviously, it is not economical to replace the miles of culvert constructed under the flat and parabolic designs, yet, at the same time, it is desirable to provide in so far as possible a uniform ditch and culvert bottom section throughout the drainage system. In Memphis two methods have been successfully worked out to accomplish this purpose. On Exhibit D these two methods are illustrated.

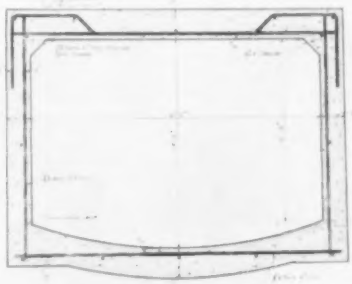
The first method merely reduced the effective area of the culvert by building up the desired section inside the old culvert. This loss of area is not as serious as it appears at first glance, because actually the flat sections have an accumulation of silt and débris which reduces the area often as much as the added concrete needed to build up the new section.

The second method is used where it is found desirable to increase the capacity of the existing culvert. In this instance the flow line is lowered by breaking out the old bottom in alternate sections not exceeding 10 feet in length, then underpinning the old structure and at the same time constructing the new type bottom. This method of low-

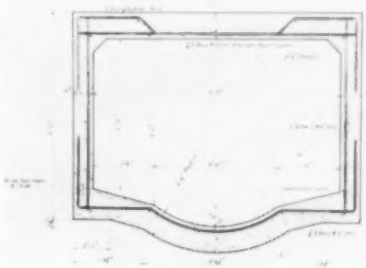
(Concluded on page 74)



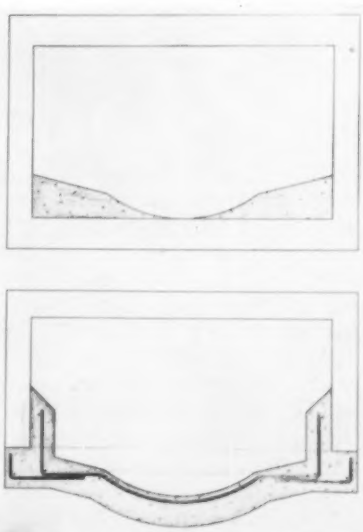
A—Standard Flat Bottom Culvert



B—Standard Parabolic Bottom Culvert



C—Standard Circular Invert Culvert



D—Culvert Alterations: Above, a Built-up Culvert; and Below, an Underpinned Culvert

This highway constructed by WPA, city and county, will free Oglesby from its historic dead-end condition

Oglesby Tackles Its Problems in the Open

By EDWARD HAND
City Clerk, Oglesby, Ill.

FOUNDED in 1903, Oglesby, an industrial city of 4,000 in western La Salle County, Illinois, refuses to be smug about its municipal government and administration. It will try new methods, new ideas, new devices. It does not belittle tradition; it does welcome improvements and refinements of old ways. And it is frank about the whole thing. There is no shielding, no secrecy about actual conditions. It says: "We are each of us the city of Oglesby."

This is the basis of the semi-annual reports, which print what each and all of the City Council have done in the weekly Council meetings of the period. The "Comment Before the Semi-Annual Report" for May 1 to October 31, 1939, states: *This Was Remarkable:*— summarizing (1) the low loss (7%) of the electrical energy purchased by the city from its wholesale power source, either diverted or lost in distribution; (2) despite bad unemployment conditions, uncollected or receivable accounts owing the city in the water and electric utilities are the smallest in ten or more years; (3) $22,000 spent for capital or long-term municipal improvements, in the six-months span; (4) no city borrowings for 8½ years, bonded indebtedness reduced to $14,000, the city on a cash basis despite its excellent credit. Other summaries follow under the headings of: *This Was Good; This Was Fair; This Was Bad.*

Every month an envelope enclosure is mailed with the utility service bills. These are varied in content and purpose, but each direct and informing, with an original approach to the citizen's common sense and feeling of responsibility. Sometimes the enclosure contains admonitions relating to fire prevention and traffic safety, or recommends electric cookery, sometimes it explains tax assessments and tax levies and urges prompt tax payments; again, it may decry sectional political thinking, boost civic movements, or extend Christmas greetings. Each of the leaflets contains a date reminder of a municipal duty or privilege.

Public Improvements

For 35 years Oglesby was a city of dead-end streets; it could be traversed from north to south but not from east to west. In 1940, it is expected, a highway cutting across the town and costing $225,000 will be completed. The WPA, the county, and the city (without bonding) have jointly spent $150,000, and the state is pledged to construct this year the last link in the artery, a $75,000 river bridge.

All water- and sewer-main extensions in the city are financed from the General Fund treasury; in fact, since 1929, no special assessments have been levied for any purpose. WPA has rehabilitated 50,000 square feet of 4-inch P.C.C. sidewalks and at present is installing concrete curbs and gutters on secondary streets, where abutting owners will one day find their paving problem simplified.

Last year a 200,000-gallon ground water storage reservoir, costing with piping and appurtenances $11,000, was constructed by the Gunite method. One of the accompanying illustrations shows the reservoir in the background. In the foreground is the city's turbine-operated No. 2 well, completed in 1933. It contains an iron-removal plant, installed in 1935. Softening remains for the future.

A land-use survey has been approved by the WPA and awaits only assignment of personnel to begin operations. We want to know —not guess — about population drifts and trends, age of structures, and blight in a commercial section.

Our streets and alleys are well lighted. Twenty 10,000-lumen so-

dium-vapor lamps light the U. S. highway which skirts the city, and three more illuminate a dangerous bridge. (See accompanying illustration.) The city's alleys are also well lighted. Financed with corporate funds, the lamps were installed by city employees.

Oglesby wanted a new Federal Building. This year a $70,000 concrete building is being erected on an exceptional corner which was owned by the city and offered at a nominal cost. When this is completed, three of the four corners at this intersection will have public buildings.

The Illinois Planning Commission has given us invaluable advice and help in park and outdoor recreation development. We have a full-time, year-round recreation program operated jointly by the city and the WPA. Two concrete tennis courts were constructed during 1939 at a cost of $2,500.

Water well No. 2 in foreground; storage reservoir in background

Oglesby installed this series of 20 10,000-lumen sodium vapor lamps on U. S. Highway 51 at western edge of city

Arbor Day is celebrated each year in Oglesby by giving every school child, both public and parochial, an elm seedling of good stock. The city also operates a small nursery, and on a first-come-first-served basis gives away the surplus after the city's needs are cared for. The trees, which would sell for a dollar, cost the city only about two cents as seedlings.

The city spends $100 for fruit and candy every Christmas for a party for all children. The program is arranged in cooperation with a local theater.

Oglesby tells its citizens that the municipal finance program has three sides: first, the taxpayers, for whom taxes are kept as low as possible, second, the unemployed union workmen, for whom we carry on contract projects to the extent of our ability and pay prevailing or union wages; third, the 40 to 50 WPA assignees who are given types of work that will rebuild their morale and provide the city with assets it could not gain otherwise.

This city believes that efficiency and democracy are complementary. What has been accomplished here has been by clear thinking, vigilance in disbursements, freedom from "fix," and by citizen interest and appreciation. We tell our citizens as we go; we do not wait for elections.

50,000 square feet of 4-inch P.C.C. sidewalks have been rehabilitated by WPA workers, who are now installing concrete curbs and gutters on secondary streets

Encourage Mass Riding

THE reason why city transportation is one of the most interesting city services is that it deals directly with the persons of the people. Some services are taken for granted—not Transit, which is there for all to see and feel. If the trolley cars and coaches are old and rickety, they are the company's and sometimes the city government's; and they shake up the citizen, ruffle his equanimity, prevent his reading on the way to work or home, soil her dress if the seat covering is not plush or mohair.

Fare reductions, zone rates, good employee relations, the elimination of cheap competition, are contributing factors to larger patronage; but truly modern vehicles furnishing a service that is agreeably sold to the people, constitute the real wand that can turn red into black.

The old order passeth, and it is a wise transit company or city transportation department which recognizes the truism and does something about it. There are elements in nearly every local transportation system which are as useless financially as an old man's youth. The United Railways and Electric Co. of Baltimore recognized that it could not buy new equipment out of a great store of memories known as stocks and bonds, so it slashed its capital structure until there were no longer any fixed charges except on $931,000 worth of 5 per cent debentures whose $46,550 interest can be earned in one month. At the same time, it changed its name to the Baltimore Transit Co.—a fresh start!

The Baltimore Transit Co. has two outstanding policies: (1) to study, understand and apply costs of operation; and (2) to provide a depreciation reserve that will assure the replenishment of vehicles.

A real knowledge of costs can determine the color of the ink in which the annual statement is written. But real costs are difficult to obtain, because they elude any but a keen, energetic mind that loves their nakedness. They must be sought impersonally, unemotionally, regardless of what they may prove when found. Real costs will show whether the street car, the trolley coach, the gasoline-electric, diesel-electric, diesel-hydraulic or gasoline-mechanical bus, is the most economical vehicle to operate on a given line. Having really determined which, it is then necessary to weigh *public preference* for the various types of vehicles against the most *economical* vehicle.

People Like Trolley Coaches

The combination of lower operating costs with trolley coaches and the public's enjoyment of that vehicle has been taken advantage of by the Baltimore Transit Co., which now operates 92 of these popular vehicles. The first installation consisted of 22 trolley coaches placed on No. 21 line in March, 1938. The 1937 income on this line *without trolley coaches* was $239,734, or 36.45 cents per car-mile. In 1939, the *first full year of trolley-coach operation*, the gross was $353,776, or 47.98 cents per coach-mile. This 47 per cent increase on Line 21 was made in a year when the gross for the entire system went down $92,727.

Meanwhile, on January 1, 1939, twenty-five trolley coaches were installed on Line 27. In 1938, as a rail line, this line grossed $369,782, or 43.20 cents per car-mile. This increase of 20 per cent has since risen to 35 per cent, and five more trolley coaches had to be ordered to handle the larger number of riders.

Patronage Increasing

It is frequently argued that any new vehicles will increase patronage. Substantial as were the increases brought about by the trolley coaches in Baltimore, these gains are continuing. In April, 1940, when the system as a whole reported a gain of 8 per cent in riding over April, 1939, Line 21 reported an 18 per cent gain, and Line 27 reported a 15 per cent gain. *These increases are in trolley-coach passengers in April, 1940, against trolley-coach passengers in April, 1939*, and seem to indicate the public's gradual and natural discovery of the excellent services offered by these two trolley-coach lines. That April increase is at the rate of $2,000 per vehicle per year, and represents a large return on the investment and a distinct preference for trolley coaches.

On April 14, 1940, 35 new 44-passenger trolley coaches were put in service on Line 10, and five more trolley coaches have been added to Line 27, bringing the city's trolley-coach fleet to 92 vehicles.

Street Cars Important

Baltimore was also a pioneer in the use of the Transit Presidents Conference Committee (P.C.C.) street car, installing 27 of these modern rail vehicles in 1937. Forty more went into service July 1, 1939, on the heaviest line of the system—the only line grossing more than $1,000,000 per year. Revenue had been shrinking, but the new cars—40 out of 65 operating on this line—boosted it 10 per cent, or $100,000 for the year. It is likely that 110 more of these P.C.C. cars will be purchased for main-line operation. The company says there are ten main trunk lines which, from the point of view of economical operation and efficient use of streets, should continue as rail lines, and that the completely modernized system might consist of 500 rail cars, 300 trolley coaches and 230 buses. In this system, the ten street-car lines would account for about 58 per cent of the gross revenue. As in the case of the modern trolley coach, the outstanding advantages of the P.C.C. car are quietness and speed in pick-up, braking, running and schedule speeds.

Quietness, speed and comfort are qualities which the public appreciates in mass-transportation vehicles, as the rise in patronage fig-

ures in Baltimore and other trolley-coach cities indicates. One prominent operator says: "There is a wider field for the trolley coach than is generally recognized." This means, among other things, that there have not been enough demonstrations in cities which could use trolley coaches or more trolley coaches.

Among the operators there are those who favor them and those who don't. They are favored by operators who have installed them and sold more rides. Opposition perhaps rests more on a *feeling* that they are less economical than buses, than on *real costs*, which, as pointed out, are not always readily computed. There appears to be a reaction setting in favoring trolley coaches as the proper and popular vehicle for medium-traffic lines. City officials have learned to distinguish between the types of local transportation, and to recognize that the difference between a P.C.C. car and a big motor-bus, or between a trolley coach and a bus, is more than a detail. It is indeed a major decision to *retain electric operation* or *abandon electric operation*. That decision calls for knowledge, and a visit to the nearest trolley-coach city may provide it and result in a benefit to the city which is planning transit modernization.

The people of a city and their visitors must judge a local transportation system by the quality of the vehicles and their availability when wanted. Short waits for good vehicles encourage mass riding, reduce the automobile traffic and reflect favorably on the city. The vehicles, moreover, are not only the public's visible evidence, good or bad, of the company's policy, but are also the tools of the company's employees, and the security of the stockholders. Says the Baltimore Transit Co.: "If their tools are not renewed as they wear out or become outmoded, there can be no jobs. If money enough is not set aside out of each year's revenue to replace what wears out and *especially what becomes obsolete*, the whole city will suffer, riders and non-riders alike, because a good modern transportation system is an absolute necessity to every large city."

What besides good service are the attributes of a *good* modern city transportation system? The first requisite is a management which desires to earn the largest revenue possible every year for always. To do this it must please the public with continuing good service, maintain this patronage and build still more through an enlightened and ingenious sales and advertising policy, enjoy financial credit by having fitted its security obligations to its earning capacity. These attributes should assure the genuine cooperation of the city government. Consequently, the wasteful elements of a transit system would be obsolete vehicles, weak sales and advertising policy, stocks and bonds having little relation to the existing property, and an unfriendly city government and public.

Baltimore's Newest Trolley Coaches

That second policy of the Baltimore Transit Co., to provide a depreciation reserve which will assure the replacement of obsolete vehicles, is highly important. "To the security holder it is the only hope," reports the Baltimore Transit Co. "Without it he might receive larger returns for a short while, but then his property would be gone forever. The property must be kept up with modern times or it will be lost. For instance, the year 1939 showed an increase of $259,780 over 1938 for the 35 rail, trolley-coach and bus lines, and $171,000 of it came from the three newly equipped lines."

The company believes the weekly pass is a delusion and is usually the sugar-coating for a fare increase. The Baltimore fare is 10 cents with full transfer privileges. To encourage off-peak riding, a popular two-trip slip is offered for use between 10 A. M. and 4 P. M. and all-day Sunday. The first ride costs 10 cents, for which a slip is given that requires only 5 cents fare for the second ride. It is said that 12 or 14 per cent of all adult riders use the two-trip slips. From June to September 15, the company offers six hours of riding after 7 P. M. for one fare. Last summer this feature collected $16,000 at an extra cost of $5,000.

A good local transportation system relieves and can prevent the development of traffic congestion by continually taking people where they want to go. Neither the automobiles nor the pedestrians want to mill around the business district. All are on their way to given destinations. The more people that use the public coaches, the less will be the melee. City governments are giving increasing consideration to requiring modern vehicles and service rather than to taxes and other transit obligations. If the local service is good, much more has been accomplished for the riders and the taxpayers than a cut-in on the revenues of a deteriorating transit system.

In Baltimore, when the city asks for a change-over to trolley coaches, the city breaks up the pavement and the company hauls the rails away. When the company abandons a rail line, the rails remain until the city decides to repave that street.

Whether or not a city should subsidize a transit company can best be decided after the company has shown that it possesses the attributes of a good transportation system. If it has pruned or blasted its ancient capital structure, operates many new vehicles and has a working replacement and depreciation program, is promoting riding and good government and public relations—it either does not want a subsidy or is in the most favorable position to obtain one.

Sewage-Gas Utilization at Rockville Centre, N. Y.

Operation of Digester, Corrosion of Gas Lines, and Precautions in Handling Digester Gas

By C. George Anderson
Superintendent,
Sewerage and Sewage Disposal

ROCKVILLE CENTRE, in Nassau County, on the shore of Long Island, has a resident population of about 20,000. The sewage-treatment plant is equipped with eight sludge-digestion tanks of the suppressed roof type, built in 1929. The water level in the tanks is maintained at an elevation slightly above the underside of the concrete roof. This has been found, on inspection, to prevent the drying-out of floating solids or scum, and provides for digestion throughout the entire tank. The sludge-gas pipes are connected to the tops of the collectors, and each collector has a scum breaker, which is a bent rod that may be rotated to break up any scum that may collect in the gas collector. The digestion tanks are heated by hot water which is circulated through a closed piping system within the tanks, the water being heated by sludge gas.

Gas-Engine Operation

Gas production for 1939 averaged 1.1 cubic feet per capita. The gas from the collectors flows through 1½-inch pipes to the PFT flame traps, which act also as scrubbers, thence to the meter and then to a gas holder of 5,000 cubic feet capacity. The digester gas is used for heating water and for operating gas engines.

In 1931 and 1932, two engines, one a 60-hp, 6-cylinder Buda and the other a 30-hp, 4-cylinder Buda, were installed, the larger for generating electric power, and the smaller connected to a blower. These engines were operated continuously for 22 to 24 hours daily and their performance was very good. The maintenance involved taking down the engine once a year, replacing valves and checking the bearings. Very little carbon was formed, and there was no noticeable corrosion.

The continuous operation of these engines was given up for various reasons. The plant is in a highly residential district and demands were made to stop all unnecessary noises. Electric power cost is low, because the community operates its own power plant, and unless an installation is large enough to warrant the cost of an attendant, small engine operation, except to use up excess gas, as is done now, is not practical. The engines must be watched, for there is always the uncertainty of gas quality and quantity, and while many small-plant operators claim perfect operation of their gas engines, they should remember that their business is primarily treating sewage and a gas engine requires attention and maintenance.

Corrosion of Gas Lines

It has been reported that excessive corrosion takes place in gas lines from digesters to such an extent that pipes have been practically eaten away. This difficulty has not been experienced in Rockville Centre, but would be detected if there were any corrosion, because of the extensive inspection-maintenance program. At least twice each year, each gas line is flushed from the flame trap to the digestion tank with water at hydrant pressure. The pipes have been tested, as has the gas holder, and no weakness has been found in the gas equipment.

We have found that small-diameter piping, under 1½-inch, is not practical in sludge-gas equipment owing to incrustation which causes clogging, and the difficulty of flushing out this material. In the original flame traps installed, the pipe from the tanks was reduced to 1 inch in the traps in order to build up the gas pressure. These were removed, so as to give a free flow of gas from the tanks through the traps to the gas holder.

Operation of Digestion Tanks

The operation of the type of digestion tank installed at this plant requires, as its chief precaution, that no air shall get into the tanks. Our operating methods prevent this by opening the displaced liquor line and allowing raw sewage to enter the tank whenever sludge is drawn off. As a safety precaution, each tank gas line has a manometer-shaped trap filled with oil which automatically cuts out of service any digestion tank should there be a drop in pressure which might cause the introduction of air. In case the gas pressure is less than the atmospheric pressure, the oil is drawn out of the trap, providing a clear opening to the air. The gas will then be discharged to the air and cannot be brought into the gas system, because of the main gas traps. The tank where the gas trap has been pulled is operated into the air until it is filled and all the air expelled from the tank. When there is sufficient methane gas to be turned into the system, the trap is filled. Our basic safety rule is to eliminate all air from digestion tanks before beginning to collect gas, and then to maintain the gas under positive pressure.

Digestion-Tank Maintenance

The operation of any equipment in a sewage-treatment plant must include careful maintenance. Our

maintenance of the eight digestion tanks in which the methane and other gases are generated, includes regular inspection and cleaning. This can be a simple, safe job if it is started properly, but if the job is tackled as though it were a mere settling tank, with no thought as to the hazardous nature of the material handled, only trouble and catastrophe may be expected.

All gas connections to the tank or holder are broken and then the gas expelled from the top, and the tank filled with fresh water which will force out the remaining gas not under pressure. Precaution should be taken in the design of a digestion tank or holder so that the high point can be completely cleared of gas. It is not always the great volume of gas that has caused damage. After the gases are removed, the sludge is drawn off with the water or supernatant liquor following on top of the sludge, until there are only two or three feet of sludge left, then the water will break through and flow off ahead of the sludge. At this time the sludge and water are flushed with a high-pressure fresh-water hose. By doing this, the sludge on the bottom is removed and mixed with supernatant liquor, the sides are washed down, and when the sludge is finally out, the tank is practically clean except for the residue, mostly inorganic, which is found under the sludge inlet in the tank.

In the heated tank when the sludge is going down, there is considerable vapor, but by testing with a pole, the depth of the sludge and water may be determined. The hose is used around the sides of the tanks, removing the sludge which is the source of the gas, and then it remains only to aerate the tank so that it has sufficient air in it to permit the entry of men with canister gas masks. These protect the workman's eyes, nose and mouth, while he is finishing the washing-down, which cannot be done entirely from the top of the tank. I do not think that any regular maintenance job on a digestion tank needs to be rushed to the extent that a hose and pump type of gas mask needs to be used, unless the tank is so deep and large that air blowers cannot change the atmosphere in the tank. A tank should be allowed to stand at least one day with blowers injecting air and with all manholes and plates off. Where a floating cover is used on a digester, there should be more than one manhole in the top.

A flame testing lamp for methane gas is used as a safety measure at the high points of the tank. Gas in high percentage causes the flame to increase in height. Using the methods described above, we do not have any high concentration of gas in any part of the tank when it is to be entered by the men. When the men enter, they are equipped with a safety belt with non-sparking buckles and loops. Owing to the depth of the digestion tanks, we change the man working in the tank every 20 minutes. When a man comes up from the hole, we put him to work hoisting the buckets, so that he is given exercise in the open air to clear his lungs of any noxious gases. There is very little labor or exertion involved in the tank. The flashlight used for inspecting the tank is the type recommended by the Underwriters Laboratories, and is definitely non-sparking. After a day of aerating, no gases of any kind are present in the tank, but there is a noticeable pungent odor. By this time the water in the residue under the sludge inlet has drained off, leaving the tank in a semi-dry condition.

Location of Gas Equipment

The place for gas equipment such as flame traps, meters and drain points, is a separate chamber away from the digester, very much as chlorine rooms are now separated from other parts of a plant. In some places this sewage-gas equipment is located in the pump- and work-rooms.

Proper location and adequate ventilation are absolutely essential where installations of gas-collection equipment, gas engines and gas boilers are made. There is always the possibility of a methane gas leak, and in the case of the gas boiler and engines, there is also the possibility of a leak of carbon-monoxide gas. An experience which caused some trouble at Rockville Centre, and which can be laid to improper ventilation in the gas chamber, may be of interest.

The gas chamber is a separate room, at the end of the battery of digestion tanks, and contains the flame traps, a water-level box which takes care of the water in the traps, and a final trap into which all the gas flows before being metered. This final trap is directly in front of the entrance door, and in the door is an iron louvre covering a full panel, and a high-speed electric exhaust fan with enclosed brushes. In very cold weather the air entering through the louvre in the door hit the final trap and froze up the 1½-inch lines, stopping the flow of gas. The gas in turn backed up through the traps to the water-level box, bubbling up into the chamber. The fan installed on the side of the room removed the gas with the exception of that which hung under the ceiling. While there were very strict rules as to smoking, and no one but operators were permitted to enter the chamber, an accident did occur. A freeze-up occurred which stopped the gas as described. The leak was reported and was about to be taken care of properly when an operator unauthorized to work in this section of the plant took the responsibility on himself to investigate. It so happened in stopping and starting the fan, or the touching of the fan blades, that a spark was created and an explosion took place. The material damage was very small—a broken window frame and door, and none of the equipment was disturbed. Within a half-hour after the explosion all connections to tanks and holders were resumed and the stoppage had cleared itself. The heat from the flash was very intense as it badly burned some of the clothing on the men. The condition was remedied by the installation of a ventilator on top of the gas chamber, operating on wind velocity as low as five miles per hour. A trap was installed at the bottom of the water-level box, and a pipe connection was made and run up into the ventilator, so that if there is any stoppage in the future, the gas will go to the atmosphere. Gage glasses were then installed on flame traps to show the water level. In the coldest weather the temperature of the gas chamber now never goes below 60° F.

—From a paper presented before the Sanitation Division, Metropolitan Section, American Society of Mechanical Engineers.

Servicing and Testing Meters

With a Large Percentage of Meters Over 20 Years Old, Oak Park Revises Test Methods, Improves Registration

By MARSHALL S. DUTTON
Superintendent,
Oak Park, Ill., Water Department

THE approach to the question of losses through meters in Oak Park has been cautious, and unquestionably at times uncertain. However, certain conditions were clearly evident. No meter shop can hope properly to maintain and service 11,852 meters with a single unit testing machine, nor can proper results be obtained when meters are tested with inaccurate flows.

WATER METERS, OAK PARK, ILL.

Sizes	Meters in Service
5/8" disc	10,819
3/4" "	392
1" "	312
1½" "	164
2" "	198
3" "	3
3" compound	42
4" "	8
4" crest	4
	11,852

The sensitivity test was used, with a 1/32-inch stream, or approximately 2 gpm, to show that the meter would record the flow. Unfortunately, this rate of flow was not correct for the size of orifice used, since by actual test the flow obtained was 4 gpm, owing to a badly worn valve used in setting the orifice. It is surprising to note that an occasional meter is now found, tested with the old equipment and repaired in 1932 or 1933, which will show 65 per cent registration at ¼ gpm flow.

Early in 1939, new Neptune meter-testing equipment was purchased, which included an 8-unit test bench, a unit to accommodate either eight 5/8-inch, seven ¾-inch, or six 1-inch meters. With this bench were purchased two calibrated tanks of 100-gallon and 10-gallon capacity, and a complete metal workbench with overhead bins and drawers for meter parts. The old Mueller test bench was completely renovated and remodeled, and is now used for 1½-inch meters and larger. By so doing, the larger meters can be tested without interfering with the testing of small meters on the multiple bench. This bench can now also be used for the accurate testing of small meters if necessary.

The accompanying photographs show the testing equipment in place. To the left of the multiple test bench is a buffing and cleaning lathe, which is nothing more or less than a remodeled shoemaker's lathe with exhaust fan attached. This equipment is extremely useful in cleaning meters and getting them into condition for repair.

Since all meter shops are very much concerned with the test on small flows, meter repair has become precision work. The requirement was first made that all repaired 5/8-inch meters must show 85 per cent accuracy on ¼ gpm flow. In six months, this requirement was raised to 90 per cent, and the repair men are now anticipating raising it to 95 per cent. Such a requirement is controlled largely by the need for installing new parts, which must be held at a minimum. In most cases, 90 per cent registration or better can be obtained by replacing the disc and disc chamber; some manufacturers make a reasonable allowance on exchange chambers. In Oak Park, however, old style meters and others not worth repairing are replaced with new meters as rapidly as finances will permit. Of the 12,000 meters in service, none ever had a sensitivity test until 1939, and only approximately one-third of the meters have been tested at all in the past five years. About 90 per cent of the meters in service are over 10 years old, approximately 70 per cent are over 20 years old, and at least 40 per cent are over 30 years old.

Meter records have been assembled from every available source and are now complete in one file. These meter record cards contain data on the original meter installa-

FRONT

ADDRESS ACCT. NO.

INSTALLED	NO.	TYPE	SIZE	REG.	READING
REPLACED	NO.	TYPE	SIZE	REG.	READING

TEST AND REPAIR RECORD

DATE	REASON	RESULTS		DATE	REASON	RESULTS	
RATE OF FLOW		BEFORE	AFTER	RATE OF FLOW		BEFORE	AFTER
MAX.-10				MAX.-10			
INTER.-1				INTER.-1			
MIN.-1/8				MIN.-1/8			
REPAIRS				REPAIRS			

TARGO METER RECORD VILLAGE OF OAK PARK

DATE	REASON	RESULTS		DATE	REASON	RESULTS	
RATE OF FLOW		BEFORE	AFTER	RATE OF FLOW		BEFORE	AFTER
MAX.-10				MAX.-10			
INTER.-1				INTER.-1			
MIN.-1/8				MIN.-1/8			
REPAIRS				REPAIRS			

GENERAL INFORMATION

BACK

The Front and Back of the Meter Record Card Used in Oak Park, Ill.

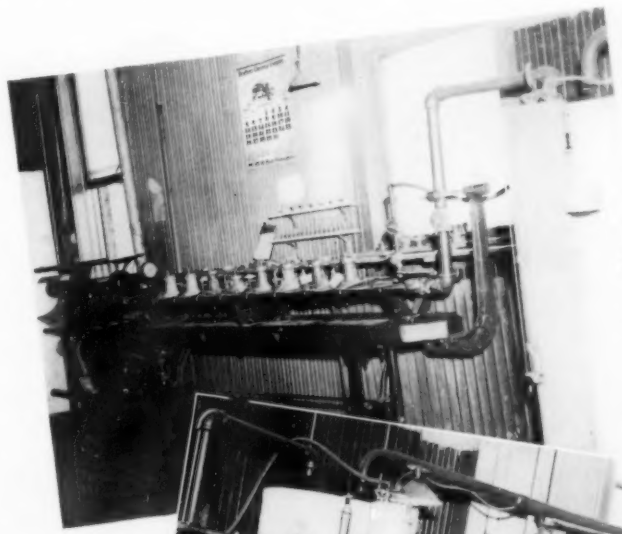
tion with space available for the record of two replacements and four tests.

A drastic change has been made in the installation of meters on 3-inch and larger services. The old system of using compound and current type meters has been entirely abandoned, and all such meters are being replaced as rapidly as possible with 2-inch disc meters, either singly or in batteries as required. Each large service is checked by sufficient flow tests, and the necessary meters installed to fit conditions. In the case of battery installations, check-valves, which release when a drop in pressure of 2 pounds occurs, are installed on all but one of the 2-inch meters. Special records and graphs are kept of these installations, showing the water consumption per month for a sufficient period before and after the change. These records invariably show an increase in the recorded consumption. On several large buildings, leaks have been repaired; refrigerating units, always a source of much lost water, have been overhauled, and the consumer has reduced the amount of water used. This reduction in loss of consumption, while causing some loss in revenue, is more than compensated for by having another satisfied customer and an accurate recording of water consumed. The experience on many types of buildings of variable requirements has been convincingly in favor of the smaller meter, in batteries of two or three. In other cases, one 2-inch meter has been all that is required on a 3-inch service connection.

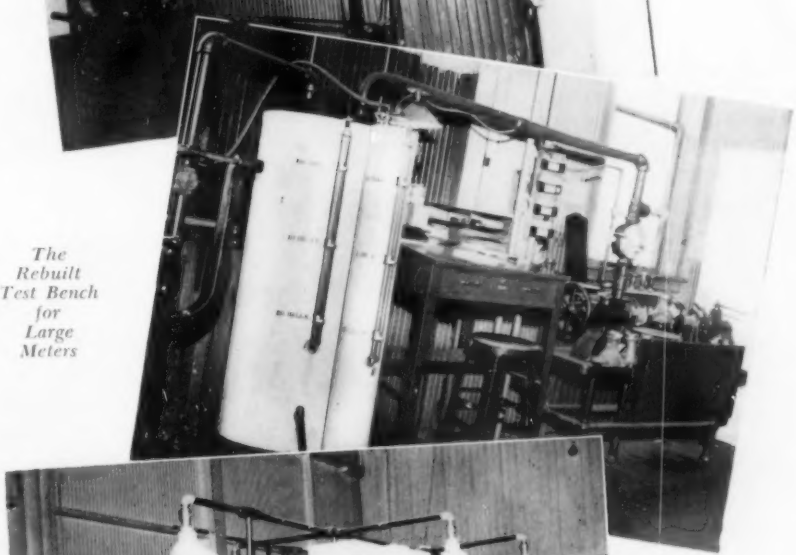
The meter department is under the supervision of the meter tester, assisted by four men. Two men bring in the meters to be tested, and re-instal them after the repairs are made, one man disassembles and cleans the meters, and one man does the repair work. All meters are tested before and after the repairs are made. As all meters belong to the individual property owners, a jumper is installed in each service during the repair of the meter, and the meter removed is replaced at the same address. For the time the meter is out of service, usually not over five days, the consumption is estimated. During 1939, 2,612 meters passed through the shop. No attempt will be made in this article to give the results obtained from any group of meters tested. Varying conditions in different communities must be analyzed in determining what methods must be used in the cleaning and repairing process and what is to be considered a reasonable lapse of time between meter tests. In Oak Park, using Lake Michigan water of 130 parts per million soap hardness and at times carrying an appreciable amount of silt, the following schedule is used in meter testing:

⅝" meters—test every 5 years or at 850,000 gals.
1" meters—test every 5 years or at 2,500,000 gals.
2" meters—test every 2 years or at 15,000,000 gals.

All the foregoing methods and operations have benefited the Water Department, but we are also extremely interested in the customer. Even though all economies accomplished benefit the consumer directly, we do everything possible to assist him in his individual problems whenever possible. We believe that every customer should be



The New 8-Unit Meter Test Bench



The Rebuilt Test Bench for Large Meters

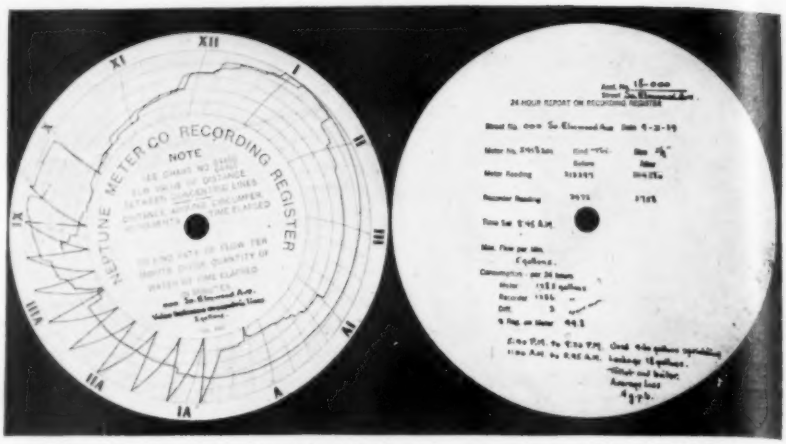
The New Steel Workbench and Parts Bins

water-conscious to the extent that he feels that he can use all the water he needs, but should not allow it to waste through leaking fixtures, underground piping or faulty refrigerating and air-conditioning equipment. We are continually calling the consumer's attention to such waste and stand ready at all times to make recordings of the water used on his premises. Naturally, since all meters will invariably under-register the longer they are in service, many serious complaints are received of high bills, after meter repairs have been made. However, we are convinced that a proper explanation of conditions to the customer, with charts of his consumption if necessary, will convince him that he is paying only for water used and recorded through an accurate meter.

A Case in Point

For example, the water consumption at the address shown on the register chart increased from 45,000 gallons to 73,000 gallons in a three-month period, owing to the installation of a new meter. The customer, however, felt that he could not have, by any stretch of the imagination, used the amount of water shown on the billings. The graphic recording was made and the chart was convincing proof, first, of the accuracy of the meter; second, that there were leaks on the premises; and, lastly, that he used water plentifully. The chart is a 24-hour recording on a 12-hour chart, on the back of which considerable useful information is recorded for future reference. This customer, like many others, feels that a real service has been rendered.

Although the village of Oak Park purchases its water supply from the city of Chicago and does not even see it at the pumping station and does not hope to see it again until it emerges from the faucet, the problems are many and varied—some very simple, others more complicated. Still, it is the purpose of the Department to deliver a wholesome water, properly registered on an accurate meter, of a sufficient quantity to fit the needs of everyone. And we believe that if no leaks or losses occur, the cost will fit the pocketbook of the individual. Knowing that the meters do not, at least, over-register, each customer must be made to realize that the amount of water he uses is directly his responsibility.



A Graphic Record of Water Used by One Consumer for a Period of 48 Hours

Advertising a City

The Best Way Is to Improve the City

(An Editorial from *Greater Cleveland* of April 25, 1940)

LAST year the city of Buffalo established a Division of Publicity and appropriated to its use $25,000, which was to be supplemented by a like amount from private contributions. The private contributions were readily provided and the Mayor appointed a board of seven members with staggered terms of seven years to spend the money thus provided and also future appropriations, in advertising Buffalo. The board employed a director of publicity as its executive officer at a salary of $4,800 per year.

The board has planned a program for 1940 consisting of:

a. Preparation of an attractive booklet on Buffalo for nation-wide distribution.

b. Preparation of a colored motion picture of Buffalo to show the city to industrial and convention groups.

c. A nation-wide advertising campaign through newspapers and magazines.

d. Placing of outdoor signs directing the motoring public to Buffalo.

A Better Way to Advertise

We can understand how such methods of advertising may help bring visitors to cities in tourist territory, and conventions to cities which have adequate hotel and convention hall facilities. But such methods of advertising amount to little toward bringing to a city permanent residents and new industries which attract permanent residents.

An officer of the Chicago Association of Commerce in a recent address coined the apt and sensible phrase, "If You Want to Sell Chicago, Improve It." That is the real selling argument for any product. If you want to make a city attractive to industries, equip it with the transportation, power,light, water, and other utility facilities at low cost; improve its highway plan so traffic will not be hampered; free labor of those artificial restrictions which make for abnormal costs and prevent the normal flow of employment opportunities; develop its park and recreational facilities so that they will make life pleasant for the mass of the people; maintain a school system which will provide the children of the employees with the highest quality of educational opportunities; and, above all, make its government so good that efficient public administration will keep taxes at a minimum and service at a maximum.

Cincinnati has proved conclusively, in actual tangible evidence, that the title of "The Best Governed City in America" is advertising par excellence. "If You Want to Sell Your City Improve it."

Oglesby, Ill., advertises its problems and their solutions to the citizens. See pages 64 and 65 in this issue.

Canberra, Australia's Capital

(*Continued from page 39*)

count of any rise in land values goes to the Crown, and an assured revenue on account of leaseholds is derived. The Government expects that, in course of time, the revenue derived from business and residential leases in the city area and from other assets in the Territory, will be sufficient to pay off the interest on the expenditure and to ultimately redeem the capital outlay.

Land for ecclesiastical purposes, not to exceed five acres for one religious body, is granted in perpetuity, the rental to be one shilling per annum if and when demanded. There is to be no future reappraisement of land for church purposes. The definition of "church purposes" means a site for a church, a residence for clergy, or a school where religious instruction is given.

Under the Real Property Ordinance, 1925, a scheme for the registration of land on the lines of the Torrens system was introduced, and leasehold certificates of title are issued. The title office provides for the usual record of mortgages, transfers, and the various incidents of land registration, with the object of rendering leases safely negotiable and facilitating commercial dealings in land according to the usage generally recognized throughout Australia.

There has been a keen demand for land under these conditions. Architecturally, many of the houses in the residential areas are unique. The majority are Australian adaptations of Spanish and Virginian types, popular in American model cities. Some diverge from what might be termed characteristic Canberra architecture and feature Italian and Georgian styles. Hedges are grown in place of unsightly fences. Red or green roofings harmonize with the colorful garden surroundings. Everywhere there are novel aspects which delight the eye and appeal to the artistic sense.

Revenue Derived from Land Values Tax

Buildings in Canberra are exempt from taxation. The bulk of the municipal revenue is obtained from a rate, amounting to one shilling (24 cents) on the pound ($4.80), on the unimproved assessed value of the land. The allocation of the rates is:

General rate	4d.	(8c)
Lighting rate	2d.	(4c)
Water charge	3½d.	(7c)
Sewerage charge	2½d.	(5c)
	12d.	(24c)

The appeal of Canberra is set forth in the "Official Guide to Australia's National Capital":

"If something 'new' appeals to you . . . if the world's most unique city, magnificent architecture, and imposing buildings garlanded by unbelievably lovely avenues of trees, shrubs, blossoms and flowers, capture your fancy . . . and a week or two of luxurious, interesting, glamorous living is all that you are wanting . . . and if the splendor of vivid sunsets stirs in you an appreciation of nature's artistry, then you will come to Canberra!"

About Blindfold Buying

CASUAL inspection of purchasing in operation is apt to concentrate upon specific procedures and methods—upon details instead of objectives. Details of procedure are obviously important as measures of performance, but are not ends in themselves. Aside from procedural detail, four major objectives summarize good purchasing essentials:

1. *To consolidate similar purchases into large-scale purchase units.*
2. *To standardize, and thus reduce to a minimum, the variety of commodities and materials purchased.*
3. *To obtain needed materials at the best price consistent with specified quality.*
4. *To carry out purchasing procedures, the details, with maximum efficiency and economy.*

The first objective of municipal purchasing is to make fewer, large purchases in place of many small purchases. In performance it involves two parts: (1) determine and consolidate the needs of different city departments for similar commodities; and (2) anticipate these needs to permit planned, quantity buying. Both measures avoid frequent purchases in small quantities; both are elementary requirements of centralized buying.

Consolidation of orders for similar commodities is not, however, sufficient or automatically obtained. As the second objective, types of commodities used by the city must be standardized to the minimum variety.

If one department asks for "x" pencil, another for "y" pencil, and still another "z" pencil, each being essentially the same, it is apparent the full benefit of consolidated buying is lost. To secure maximum consolidation, standards must be established for materials in relation to need and use, and these standards made the basis for purchases instead of "x," "y," or "z."

But with quantity buying and standard specifications in force, good purchasing still is not an accomplished fact. The city also must be assured the best price possible for specified quantity and quality by making certain that full and effective competition prevails on all purchases. Without this third essential it is impossible to obtain full value for city dollars.

Finally, in its own operation, centralized purchasing must be economical, unhampered by red tape and unnecessary detail, free from interference by those not directly responsible for its operation. It must be conducted by staff members who know their jobs, who can and do perform them efficiently, whose "attitude" toward the work gives conviction that good purchasing practices are enforced.

—From a leaflet of the Bureau of Municipal Research of Newark, N. J.

Saving Money on a City Report

CONCORD, N. H.—Gustaf Lehtinen, Director of the Concord Planning Board, was given the task of publishing the city report for 1940. On May 13 the report was released. It contains 80 pages as compared with 260 pages in that for the previous year. Illustrated with 40 pictures, diagrams and charts, it is said to be the most interesting and intelligible report published by any city in the state. The 1940 report was produced at $700 less than the report of the previous year, which cost the city $1,800. This saving has been accomplished though 2,500 copies were printed, or 1,000 more than the previous year.

—From *The New England Townsman*, Maine Municipal Association publication.

Claremont Profits by Relief Projects

(*Continued from page 54*)

the official basis for future land surveys in the area and making it possible for a property owner to stake out his property accurately at a cost much less than that now possible.

All of this builds toward the final drafting of the official cadastral map of the city, made on the Lambert Conic Projection, compensating for curvature of the earth's surface. This map will show the complete history and deed references of the streets and other public property and will be to a size, scale and land position according to the standard adopted by the County Surveyor in cooperation with Federal authorities, which is referred by proper coordinates to the geographical center of the United States. When completed, its sections will fit with other sections adjoining and elsewhere to form a comprehensive area map.

Following this, using the cadastral map as the base or framework, the utility map will be made, showing the location of all underground utilities such as sewer, water, gas, electric, telephone, heating and other lines and structures that are underground within the public rights-of-way. This of necessity includes all connections to structures on private property already shown on the cadastral drawing.

Value of Records and Maps to City

All of this, then, provides a system of records and maps that makes available in simple, usable and findable form the data in the City Engineer's office (which in Claremont includes the Inspection Department) so often desired by its citizens and needed for various projects from time to time. Many interesting situations were encountered during the progress of the work that required action of one kind or another to clear the records, to acquire legal rights-of-way and to vacate old rights-of-way no longer used. The surveys disclosed in one instance that the city did not hold title to land being used for public purposes, while in another instance land had been improved for public use that lay largely outside the publicly controlled area.

The project has been of benefit also to the men employed by WPA in giving them the opportunity to develop their skill along beneficial lines and to acquire new related skills—to learn that a job worth doing must be done well, and that survey work in particular cannot be done and checked out in a haphazard manner. Several men have secured substantial private employment as the direct result of their work on the project.

From the taxpayer's standpoint, the entire program has demonstrated that as long as money must be spent for relief, its expenditure can well be directed into channels providing services or facilities for the general public good, both for immediate use and in laying the foundation for future beneficial and orderly development.

Moose Jaw, Sask., Water Supply

(*Conitnued from page 41*)

its kind in Canada.

The pumping station at the Saturation Area is 50 feet long, 20 feet wide and 31 feet high, inside dimensions. Within this building are housed four centrifugal pumps and two vacuum pumps, and two float control and separating chambers, together with the necessary electrical equipment and a 2-ton hand-operated traveling crane. The 12-inch discharge pipe line from the pumps is placed at the same elevation as the header pipe line within the building. This discharge line is connected to the 18-inch steel supply main to the city. The main is approximately 20 miles long, and some sections of it are laid in alkali-impregnated ground, which has proved destructive to the line, so that 5 miles of it was replaced last year with class C cast iron pipe at a cost of $155,000.

The estimated cost of the entire new water-supply project of Moose Jaw is in the neighborhood of $700,000, of which the city is contributing $200,000 and the Dominion Government of Canada, $500,000.

Malaria and Drainage Ditches Combined Effectively

(*Continued from page 63*)

ering the bottom of existing culverts has been used successfully in Memphis since 1935, when it was originated as a method to increase the capacity of existing culverts and also to lower the flow lines of individual culverts to conform to established grades worked out for the entire drainage system. The underpinning method has proved entirely practical, and considerable savings have been made by thus salvaging the old culverts and eliminating costly excavation, shoring and bracing. Thus, culvert capacities have been increased under existing buildings where it would have been almost impossible to construct new culverts of adequate size.

Out of the 220 miles of drainage in Memphis, 99 miles has been covered with pipe or culverts. An additional 66 miles has been lined with concrete, most of which is the small ditches. This leaves 57 miles, about 27 of which has been considered small enough to include in two recent applications to WPA for lining with concrete as malarial-control drainage.

William B. Fowler, City Engineer of Memphis, is in charge of the construction of all flood-control and malarial-control ditches. Alfred H. Fletcher, Sanitary Engineer of the City Health Department, is responsible for the malaria-mosquito control work of that Department.

Water Rates and Service Charges

1940—Part VII

Covering Domestic and Industrial Meter Rates, Discounts and Penalties, Installation Charges, Fire Hydrant Rentals and Fire Sprinkler Costs

Newark, N. Y.

Present population	8,500
Population served	6,500
Number of active services	1,891
" " meters	1,886
" " hydrants	220
Miles of water main	28.7

The village of Newark is divided into three districts for the collection of water bills, and the bills for each are due on the first day of the quarterly months for that district. The meter rates charged to all consumers in the village are:

First	50,000 gals. used quar.	$ .30 per	1,000 gals.
Next	50,000 " " "	.20 "	" "
"	100,000 " " "	.15 "	" "
"	800,000 " " "	.13 "	" "
"	1,000,000 " " "	.11 "	" "
All over used quarterly		.09 "	" "

A 5% discount for payment of bills by the 10th of the month is allowed. Meter rentals are charged to all consumers as follows:

⅝" disc meter	$ .25	per quarter	or	$ .09	per month
1" " "	.72	" "	"	.24	" "
2" " "	1.80	" "	"	.60	" "
3" " "	4.20	" "	"	1.40	" "
4" " "	6.60	" "	"	2.20	" "
6" " "	13.20	" "	"	4.40	" "
1½" c'pound meter	$1.80	per quar.	or	$ .60	per mo.
2" " "	2.40	" "	"	.80	" "
3" " "	4.80	" "	"	1.60	" "
4" " "	7.20	" "	"	2.40	" "
6" " "	14.40	" "	"	4.80	" "

Applications for a supply of water for any premises or for the extension of any pipe must be made in writing on the books of the Municipal Board, and if the applicant is not the owner of the premises, the written consent of the owner must accompany the application. Where more than one building or tenant is supplied through one service pipe, the application for the supply of such buildings or tenants must be made by one person, and that person is held responsible for all water supplied through the service lines. All connections with the water main and all service pipes from the mains to the house, building, structure or vacant lot are made by the Superintendent of the Water Works, or his representative, at the expense of the consumer. All costs are figured from the water main. At the time an application is made for a new water service, a deposit must be made to cover the estimated cost of the installation. In case the cost exceeds the estimated cost, the additional charge must be paid by the consumer. In case the actual cost is less than the deposit, a refund is made.

No charge is made for public fire hydrants attached to the village mains. Fire-protection service for use with a sprinkler system or standpipe hose lines is provided at the following rates:

	Each 3 Mos.
Each connection at main for sprinkler system	$2.50
6" connection for standpipe and hose	2.00
4" " " " " "	1.50
2" " " " " "	1.00

No connection may be made to any private fire-protection service for domestic purposes, unless metered, under a penalty of $25 for each offense.

L. H. Wright,
Superintendent, City Water Works.

Auburn, Maine

Present population	20,000
Population served	17,000
Number of active services	3,323
" " meters	90
" " hydrants	265
Miles of water main	63

The meter rates for Auburn are payable quarterly as follows:

First	10,000 cu. ft.	$ .09	per 100	cu. ft.
Next	20,000 " "	.05	" "	" "
All over	30,000 " "	.04	" "	" "

The minimum rate for a service is $6.00 per year, or $1.50 per quarter.

Applications for the introduction of water to the premises must be made in writing at the office of the Water District, by the owner of the property or by his agent. Similarly, applications for new service pipes or for service pipes to be relaid on the customer's premises must be made in writing to the Water District, and the District supplies the service pipes in place on a deposit computed on the following basis:

¾" pipe	$1.00 per lineal foot
1" "	1.25 " " "
Minimum deposit on ¾" service	6.00
" " " 1" "	8.00

These prices apply under ordinary or easy digging. When ledge or rock is encountered, the actual cost is charged. For larger sizes of pipe, an amount determined by the Superintendent as the estimated cost of completing the work is charged. Any excess money deposited with the District is returned when the work is completed, or any deficiency is due and payable within 30 days after completion of the work.

There is no charge for either public or private fire hydrants nor for sprinkler heads for private fire protection.

H. J. Cook,
Superintendent, Auburn, Maine, Water District.

Sherman, Texas

Present population	16,500
Population served	16,000
Number of active services	4,525
" " meters	4,525
" " hydrants	432
Miles of water main	61.25

The water rates for the city of Sherman are:

First	4,000 cu. ft.	$ .375	per 100	cu. ft.
Next	2,000 " "	.3375	" "	" "
"	1,000 " "	.30	" "	" "
"	1,000 " "	.2625	" "	" "
"	2,000 " "	.225	" "	" "
"	200,000 " "	.1725	" "	" "
All over	210,000 " "	.115	" "	" "

Application for water service is made by the owner through a licensed plumber, in writing. All services are run by licensed plumbers under city inspection, and the charges are paid by the property owner to the plumber.

There is no charge for either public or private hydrants for fire fighting, nor for sprinkler heads for private fire protection.

Roscoe Russell,
Superintendent, City Water Department.

Little Falls, N. Y.

Present population	12,000
Population served	12,000
Number of active services	1,900
" " meters	1,975
" " hydrants	203
Miles of water main	21.1

The water rates charged in Little Falls consist of frontage rates for business and dwelling houses, and vacant property, at the rate of $.02 per lineal foot of the property abutting on street, alley, lane, or public place through which a water main is laid, and whether or not the property is occupied. For business property, the entire frontage is measured and charged for as on all streets, lanes, or public places, where pipe is laid. For dwelling houses, the frontage is measured and charged for only on the frontage on which the building faces. The charge for vacant property is only for the front on which the property faces. Churches are exempt from the frontage rate charges.

Service rates are charged according to the size of meter or service line, as follows:

⅝" service, or under	$10 00	per year
¾" "	14 00	" "
1" "	20 00	" "
1½" "	40 00	" "
2" "	70 00	" "
3" "	150 00	" "
4" "	250 00	" "
6" "	500 00	" "
8" "	800 00	" "

Hydraulic elevators are charged a flat rate of $60, which is not deducted from the meter rates.

The frontage rates and the service rates are flat rates charged to all users and consumers of water. These users and consumers are entitled to use, without further cost, an amount of water computed at the standard meter rates below, which would be paid for by the total assessment under the two schedules. All water used in excess of this quantity must be paid for at the standard meter rates quarterly, as soon as the excess is recorded. The meter rates are:

		Per 100 Cu. Ft.
First	5,000 cu. ft. per quarter	$ .14
Next	20,000 " " or less per quarter	.12
"	20,000 " " " " "	.10
"	20,000 " " " " "	.08
"	20,000 " " " " "	.06
"	15,000 " " " " "	.05
"	2,000,000 " " " " "	.04
All above 2,100,000 cu. ft.	" "	.03

The Board of Public Works reserves the right to attach a meter to any service pipe at any time whenever it deems it expedient. Thereafter, if the water measured and used at the meter rates exceeds in value the flat rates assessed to the consumer under the frontage and service rate schedules, the consumer must pay, in addition to the flat rates, the amount of the excess as measured by the meter and charged at the regular meter rates. All meters are repaired by the Board of Public Works whether owned by them or the property owners. The repairs to meters larger than 1" must be paid by the property owner. Damage to meters resulting from the carelessness of the owner, his agent or tenant, or from neglect, must be paid to the Board of Public Works, whether the meter is owned by the property owner or the Board.

If a meter gets out of order and fails to register correctly, the consumer is charged during the time the meter is out of order at the daily average consumption shown when the meter was in order. A 5% discount is allowed on excess meter bills if paid within 10 days after presentation.

Applications for permission to connect a service to the pipe must be made by the owner of the premises. These applications state the use to which the water is to be put, and the manner in which it is to be used, as well as the name of the plumber selected to do the work. All expenses attending the introduction of water to any premises must be paid by the applicant.

All tapping of water mains, after an application has been approved, is done by the regular tapper in the employ of the Board of Water Commissioners. The corporation cock is furnished at cost to the consumer, and the actual expense of tapping must be paid by the consumer.

No charge is made to the city for public fire hydrants attached to the water mains, and no special fee is charged for sprinklers attached to services designated for fire purposes only.

R. D. AUSTIN,
City Engineer.

McPherson, Kans.

Present population	7,654
Population served	7,654
Number of active services	2,030
Number of meters	2,030
Number of hydrants	123
Miles of water main	22 6

The rates for water service furnished by the Water and Electric Department of the city of McPherson are as follows:

		Per 1,000 gals
First	5,000 gals. per month at	$ .25
Next	10,000 " " " "	.20
"	10,000 " " " "	.15
"	25,000 " " " "	.10
All over	50,000 " " " "	.08

The minimum monthly charge is based upon the size of the water meter as follows:

Size of Meter	Minimum Monthly Charge	Monthly Meter Rental	Total Monthly Minimum
⅝"	$ .50	$ .10	$ .60
1"	1 00	.20	1 20
1½"	2 00	.40	2 40
2"	3 50	.40	3 90

The rate below for sprinkling service for lawns and gardens is applicable to residences only from April to September readings inclusive each:

First 5,000 gals. per month at	$ .25	per 1,000 gals.
Excess " " " "	.08	" " "

The application for water service must be filed at the office of the Water and Electric Department and signed by the owner or agent and his plumber. The plumber runs the service line and sets the meter after the city has made the tap in the main, charging $3.00 for a ¾" tap and corporation cock. The Water Department furnishes the meter tile and cover, together with the meter, making a rental charge of $.10 per month for a ⅝" meter.

A charge of $40 per year is made for each 4" fire hydrant, and $50 per year for each 6" hydrant. There are no sprinkler heads installed for private fire protection in McPherson.

L. C. ANGEVINE,
Superintendent, Water and Electric Department.

Decatur, Ind.

Present population	6,000
Population served	5,800
Number of active services	1,544
Number of meters	1,544
" " hydrants	175
Miles of water main	72

The water rates in Decatur, Ind., comprise charges for water used with a minimum annual charge paid quarterly as follows:

First	1,000 cu. ft. per quar.	$ .34 per 100 cu. ft.
Next	2,500 " " " "	.30 " " " "
"	3,000 " " " "	.27 " " " "
"	6,000 " " " "	.23 " " " "
"	50,000 " " " "	.19 " " " "
"	60,000 " " " "	.16 " " " "
All over	122,500 " " " "	.15 " " " "

The minimum quarterly charge depends on the size of the meters. When the consumption in any quarter exceeds the minimum, the meter rates apply. The minimum charges are:

⅝" meter	$2 .50	per quarter
¾" "	3 00	" "
1" "	3 50	" "
1¼" "	5 00	" "
1½" "	7 00	" "
2" "	9 00	" "
3" "	12 00	" "
4" "	15 00	" "

A 10% collection charge is added to the bills of $3.00 or less not paid within 20 days from the date of the bill, and for bills over $3.00 the charge is 3%. Meters are read once every three months on or before the 20th of the last month in the quarter. The list of all delinquent water bills is furnished to the Water Committee quarterly and a notice mailed to each delinquent consumer. If the bill is not paid within 60 days after the date due, the service is discontinued. Water meters are furnished and set by the City Water Department.

Parties desiring water services extended to their premises, from existing mains in the street or alley adjacent to the property, must make application at the office of the Water Superintendent on special blank forms furnished. These forms set forth the location of the property to be supplied, the name of the property owner, size of service desired, and the amount to be paid for the service. If the application meets the approval of the water superintendent, the applicant then pays the City Treasurer the amount of charges for the service according to the schedule of charges below, and upon presentation of a receipt for this amount, the superintendent issues the permit and installs the service.

The charges for the installation of services from the main to the service stop located at the curb line or back of the sidewalk adjacent to the curbing are $5.00 for a ⅝" service and the actual cost of labor and material for all others. The city retains ownership and maintains the service from the main to the curb box.

No charge is made for public fire hydrants nor for fire lines serving sprinklers for private fire protection.

CHAS. BRODBECK,
Superintendent, Decatur City Water Works.

Orlando, Fla.

Present population	35,000
Population served	36,000
Number of active services	9,104
" " meters	9,249
" " hydrants	481
Miles of water main	190.72

The water rates charged by the Orlando Utilities Commission for all water delivered are as follows:

First	10,000 gals.	$ .25 per 1,000 gals.—net rate
Next	40,000 "	.20 " " " "
"	50,000 "	.15 " " " "
All over	100,000 "	.10 " " " "
Minimun charge for month		$1.00

The charges for taps for new services are:

¾" tap	$9 00
1" "	12 00
1½" "	18 00
2" "	21 00

All larger taps are charged at cost of

installation. A $5.00 deposit is also charged and refunded when cut off.

There is a charge of $25 each for public fire hydrants and $25 per year per tap for sprinkler heads for private fire protection.

L. L. GARRETT,
Service Manager, Orlando, Fla., Utilities Commission.

Canton, Ohio

Present population	120,000
Population served	120,000
Number of active services	25,383
Number of meters	25,383
" " hydrants	1,382
Miles of water main	304

The city of Canton is divided into 3 zones, in each of which the meters are read quarterly, one zone being covered each month. Bills for metered water are rendered on the first day of the month following that in which the reading is taken, and are subject to a discount of 10% if paid on or before the 10th of the month. Bills become delinquent if not paid within the discount period, and the service may be discontinued and the water shut off on 5 days' notice. The water rates for domestic consumers are:

Oirst 20,000 cu. ft.	$1.00 per 1,000 cu. ft.
Fext 20,000 " "	.85 " " " "
Nver 40,000 " "	.75 " " " "

The minimum meter rates vary according to the size of the meter as follows:

⅝" meter	$2.50 net per quarter
¾" "	3.15 " " "
1" "	3.75 " " "
1¼" "	5.00 " " "
1½" "	6.25 " " "
2" "	7.50 " " "
3" "	12.50 " " "
4" "	17.50 " " "
6" "	31.25 " " "
8" "	37.50 " " "

A discount of 10% is given on all meter rents providing they are paid in the specified time. However, no discount is given below the net minimum meter rate.

Whenever any premises has its own water supply and also a connection with the Canton Water Works mains for use only in case of failure or insufficiency of the private supply, the same minimum quarterly payments are required as of domestic consumers, and the same minimum meter rates are charged.

All meters are under the absolute control of the Division of Water and are maintained without charge to the consumer. When meters are sold to consumers, the Division of Water reserves the right to repurchase them. Meters damaged by abuse, misuse, frost or accident, or any act of carelessness, are repaired by the Division of Water at the expense of the consumer. Consumers are required to keep meters boxed and packed or otherwise protected in such a manner as to prevent freezing, and they are held responsible for any damage caused by freezing and are charged as follows for the repair of frozen meters:

⅝"	$2.50	3"	$5.00
¾"	2.50	4"	10.00
1"	3.00	6"	20.00
1½"	3.50	8"	30.00
2"	4.00		

The Division of Water reserves the right to remove a meter from any premises and substitute another meter in its place for the purpose of making repairs or testing. The meter department, on its own initiative, undertakes to test and correct any meter which, in its judgment, is registering incorrectly, without charge to the owner. Upon written request from an owner, or consumer, and an agreement to pay the test charge, the meter department removes any meter to the meter shop for test. The charges for such tests in the city's shop are as follows:

⅝", ¾" and 1" meters	$1.00
1½" and 2" meters	2.00
3" " 4" "	10.00
6" " 8" "	20.00

If upon examination and test it is found that a meter does not register within the limit of the following percentages of water flowing through it, 2% high or low on disc meters, sizes ⅝" to 2" on flows of from 1 to 20 gpm; 5% high or low on all other types and sizes of meters on flows from the low to the high rating; then the meter is considered inaccurate and no test charge is made.

If, upon tests or otherwise, it is found that a meter does not register within the limits above specified, the consumer is either assessed or credited an estimated amount based upon the average consumption shown when the meter is properly registering.

All applications for the use of water from the Division of Water must be made by the owner of the premises or his authorized agent. No plumber or other person is permitted to extend a service from the curb cock to any premises unless the owner thereof, or his authorized agent, has first secured the necessary permit from the Building Department.

Only authorized employees of the Division of Water are permitted to tap or make any connections with the mains or distribution pipes of the water works. All service connections on pipes for supplying water from the mains must be installed at the expense of the property owner or person making the application for service. The service connection between the main and a point approximately 1 ft. inside the curb line, including the curb cock and curb box, are installed by employees of the Division of Water only.

The charges for service connection between the main and a point approximately 1 ft. inside the curb are:

¾"	unpaved street	$15.00;	paved street	Extra	$25.00
1"	"	"	18.00	"	"	25.00
1½"	"	"	25.00	"	"	25.00
1½"	"	"	28.00	"	"	25.00
2"	"	"	32.00	"	"	25.00

All services installed outside the corporate limits cost 20% more than rates above.

A charge of $2.00 is made for inspection service if the line is not put in by the city. No property owner is entitled to any benefit in the cost of a service connection by reason of the fact that the main is closer to his side of the street. All charges for service connections are based on the distance from the center of the street to the curb regardless of the size of the street on which the main is located.

No water is supplied to any premises the owner of which is delinquent in the payment of water bills or indebted to the Division of Water for material, supplies or work done, or in any other manner, until the indebtedness has been paid; and the Division of Water further reserves the right to shut off the water from the premises upon giving a 5-day notice. When water is turned off on account of any delinquency, it is not turned on again until all delinquencies have been paid, together with an off-and-on charge of $1.00, or $2.00 outside of the city.

No charge is made for the installation and maintenance of public fire hydrants attached to the city mains.

When water for private fire protection is furnished on an assessment basis, the charge is based on the size of the service main and is payable quarterly. The charges are:

2"	$2.00
3"	3.00
4"	4.00
6"	7.00
8"	10.00

No assessment charge is made when the fire service is metered, at the expense of the consumer or owner, in which case it comes under the rates for domestic consumers.

C. S. BOLENDER,
Superintendent, Canton, Ohio, Water Works.

Danvers, Mass.

Present population	15,484
Population served	14,200
Number of active services	3,066
" " meters	3,066
" " hydrants	484
Miles of water main	66.87

The Danvers Water & Sewer Board changed the rates for water service on January 1, 1939, to be $.15 per 100 cu. ft. for all water used, plus the following quarterly service charge:

⅝" meter	$1.20	3" meter	$18.00
¾" "	1.80	4" "	24.00
1" "	2.80	6" "	42.40
1½" "	5.00	8" "	74.40
2" "	8.00		

When a consumer applies for water service, the Water Board furnishes and lays all the pipe from the main into the cellar and places a shut-off at the end of the pipe. The Board assumes the cost of this installation in the street as far as the property line, and the owner pays for that part on his property. The charges for the installation of water service are $.80 per foot per 1" pipe laid, $.90 per 1¼" pipe laid, and $1.10 for 2" pipe.

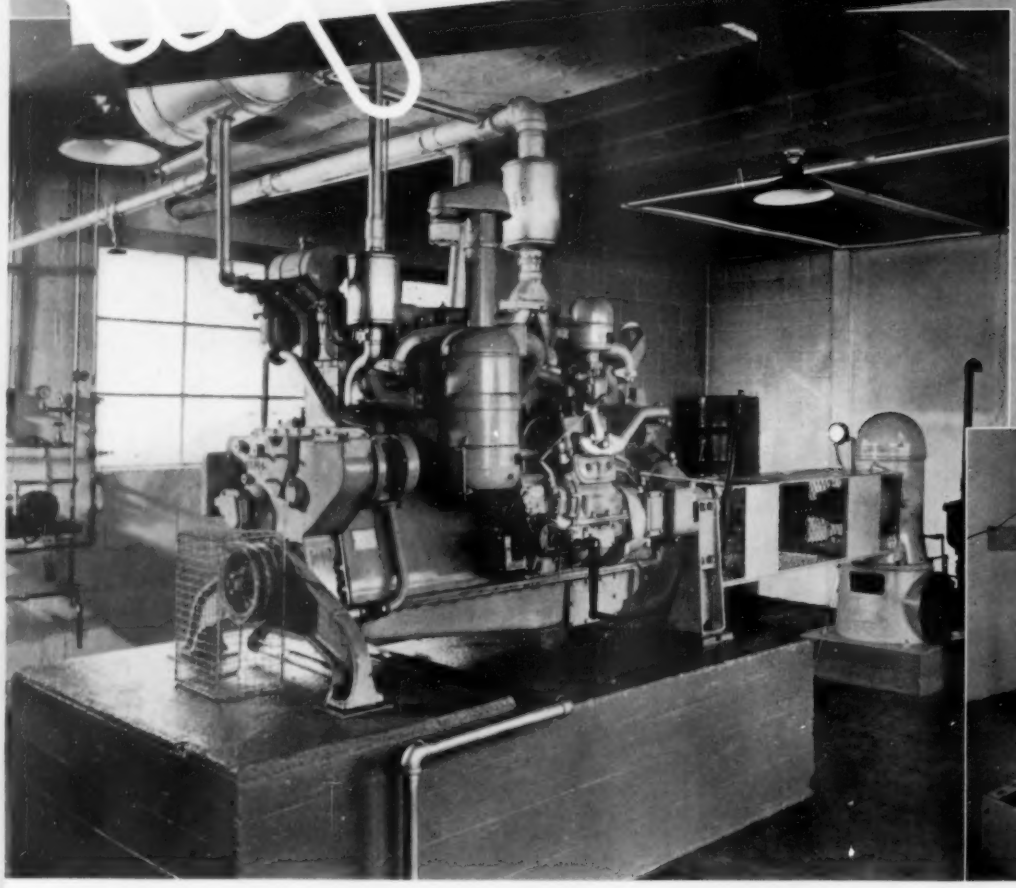
No charge is made either for public or for private hydrants. The charge for public hydrants was eliminated in 1937, and no charge has ever been made for private hydrants. Also, no charges are made for sprinkler heads or for the amount of water that is used on fire lines. When a fire service is installed, the customer pays for the entire installation.

ROGER W. ESTY,
Superintendent, Danvers, Mass., Water and Sewer Board.

(To be continued in the August issue)

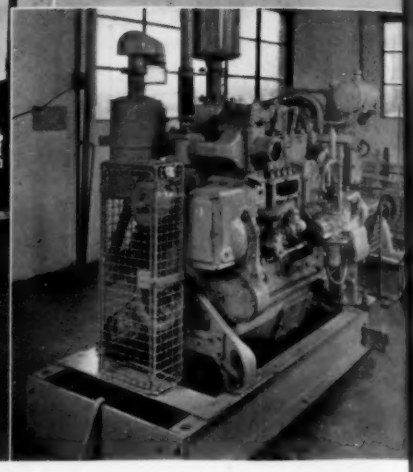
Please give credit to
THE AMERICAN CITY
when quoting from it.

THEY GOT IT FOR A "SPARE" ...NOW IT'S "THE WORKS"!



"Caterpillar" Diesel D13000 Engine working 17 hours a day and pumping 1000 gallons of water a minute against a total head of approximately 300 feet. Owned by the West Lafayette (Indiana) Water Works.

Another "Caterpillar" Diesel Engine owned by the West Lafayette Water Works. This is a D3400 used to drive a centrifugal booster pump which raises the reservoir pressure of 20 pounds, in the high-elevation residential district, to 70 pounds.



WITH three electrically operated wells as its water-system, the West Lafayette (Indiana) Water Works decided to install this "Caterpillar" Diesel D13000 Engine as a supplement. It went to work . . . and performed so efficiently and economically that it was promoted to handling practically the whole job — with the three wells it was supposed to assist now acting as *its* assistants!

Driving a deep-well turbine pump, the D13000 works from seven in the morning until twelve midnight — sending 1000 gallons of water a minute into the city mains. Seventeen hours of work a day . . . and judging from the performance of other "Caterpillar" Diesels, this one at West Lafayette can keep that up for years to come with a minimum of repair-expense! For "Caterpillar" Diesels are designed and built to stand up under the heaviest type of work — and give you the full benefit of their outstanding economies across thousands of working-hours!

Write us your particular power-requirements (or see your nearest "Caterpillar" dealer) and we'll gladly furnish "Caterpillar" Diesel specifications that should result in cash savings or greater dependability and efficiency . . . *or all three!*

CATERPILLAR TRACTOR CO., PEORIA, ILL.

CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL ENGINES AND ELECTRIC SETS

TRACK-TYPE TRACTORS • ROAD MACHINERY

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

The Trails and Views of Prescott Park

MEDFORD, ORE.—Prescott Park forms part of the metropolitan park system of the city of Medford, which is located in the southwest section of the state of Oregon along the Pacific Highway and Southern Pacific Railroad, near the junction of Bear Creek and the Rogue River.

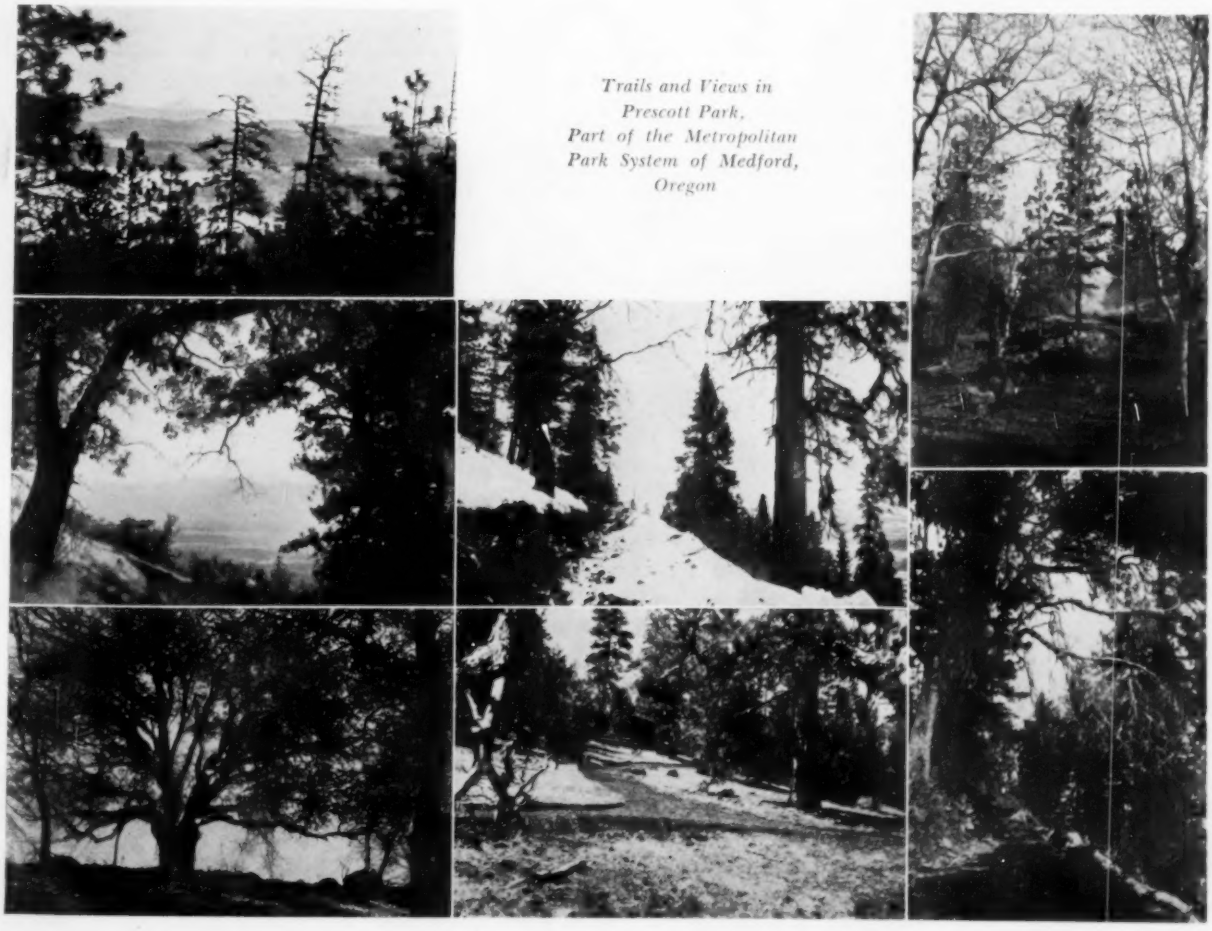
This 1,700-acre tract lies directly northeast of the city's business district and 7½ miles from it by road. The park was established through the initiative of the Medford Lions Club, which acquired 200 acres of the present park area in February, 1929, as a club civic project, and deeded it to the city of Medford in May, 1930, following approval of the area as a metropolitan park by the City Planning Commission. The city later purchased the remaining 1,500 acres, 1,100 of which were Oregon and California Land Grant property, and 400 of which were United States Public Land —from the United States Government, under the provisions of the Act of Congress of June 14, 1926, providing for the acquisition, by political subdivisions, of government land for recreational purposes. In 1933, these holdings were named Prescott Memorial Park as a memorial to George J. Prescott, Medford police officer and Jackson County constable. Later, the name was shortened.

Actual development of Prescott Park began with a CWA project during the winter of 1933-34 to build a road on the eastern edge of the city, to the park property. Later an SERA project continued the work on the road, and in the fall of 1935 additional work was accomplished under a WPA project.

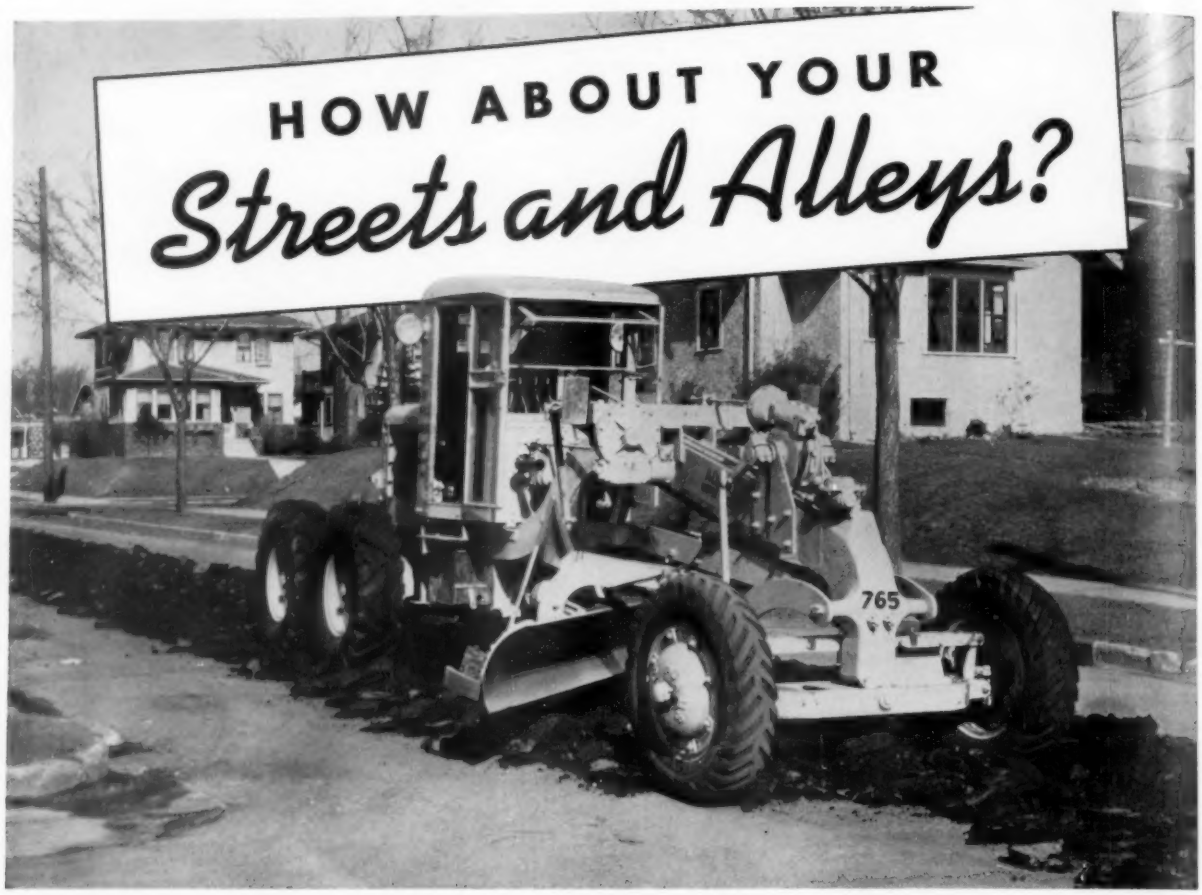
Following this work, application was submitted through the National Park Service for a Civilian Conservation Corps camp, which was established in November, 1935, by a full Civilian Conservation Corps company with a National Park Service supervisory and planning staff.

The main feature of attraction and the focal point in Prescott Park is Roxy Ann Peak, rising 2,304 feet above the 1,280-foot level of the Medford business district, to an elevation of 2,584 feet above sea-level, 1,675 feet above the lowest point in the park, which is 1,900 feet above sea-level. Views of the valley, or nearby towns, and of mountain peaks and ranges, constitute the outstanding attraction of Prescott Park.

The park also offers considerable variation in topography and in types of bird and plant life, including fine, large madrone, oak, and pine trees and a colorful wild-flower display in the spring and early summer. During the winter season, when fog often lies in the Rogue River and Bear Creek



Trails and Views in Prescott Park, Part of the Metropolitan Park System of Medford, Oregon



IF your unimproved streets and alleys are all in shipshape and you have plenty of efficient equipment to keep them that way, then just forget the above question. But—if you have in mind grading some new streets, regrading some old ones, scarifying and reshaping oiled streets, putting black-top surfaces on some others and need an efficient machine to do all this work (plus year 'round maintenance) this message is for you.

Adams offers a wide selection of motor graders from a big 66½-hp. Diesel machine, capable of the heaviest scarifying and construction work, down to small machines which any town can afford. There is an Adams dealer or representative near you who will be glad to tell you all about them. Why not get in touch with him today? If you do not know his name, mail the coupon below and we shall be glad to mail you catalogs and put you in touch with him immediately.

☆ADAMS
MOTOR GRADERS

Upper Picture: An Adams heavy-duty motor grader tearing up an oiled surface for reworking . . . Lower Picture: Similar machine does low-cost street and alley maintenance.

J. D. ADAMS COMPANY, Indianapolis, Indiana

Gentlemen: Send me the name of your local representative and catalogs describing your ☐ Heavy-Duty, ☐ Medium-Size, ☐ Small Motor Graders.

Name .....

Title .....

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valleys for days at a time, these areas during most of that period are above the fog and offer opportunities to enjoy the unusual cloud panoramas and the brilliant sunshine.

Work is continuing on the project and we are now developing two beautiful picnic areas, one on the north side of the peak and the other on the south side. Spring water is available for these areas, and tables, benches and camp stoves are being provided.

Over 18 miles of horse trails are available to equestrians.

This project has helped in large measure in the reduction of fire hazards, for with the construction of roads and trails it is a protection to all the adjoining areas, which are grazing and timber lands.

F. W. SCHEFFEL,
City Superintendent.

"Toybraries"

TAMPA, FLA.—"Toybraries" are a successful experiment in Tampa and Hillsborough County to bring happiness into the lives of hundreds of under privileged boys and girls. Operated in the same manner as a library—except that toys take the place of books—the Tampa "toybraries" have 5,000 playthings which are lent to children for two-week periods. Shelves are lined with dolls, calico animals, puzzles, boats and scores of other varieties of toys, and youngsters make their selections, sign the cards and take the toys home.

Sponsored by the WPA and employing fifty craftsmen to repair and make the toys, there are eight branches of the toy-lending project in Tampa and Hillsborough County. Nearly all the toys used are made by the workers in a downtown rent-free loft. All materials are contributed to the project by Tampa citizens; private sponsors make vacant stores available to distribute the toys. From wooden boxes and crates are fashioned boats, automobiles and other favorites of little boys. Tampa housewives who give ribbons and rags are surprised a few days later to see them fashioned into dolls and toy animals. Paper towels and paper sacks—after a little persuasion from plaster of paris molds—turn into smiling dolls' faces and well-formed hands and feet. Jig-saw puzzles are made from magazine covers mounted on beaver board and then cut out by sewing machines.

A unique feature of the toy-lend ing libraries is the "adoption" procedure which little girls may follow. If a doll is given a good home, it may be kept for an additional four weeks by the girl-mother. If at the end of that time the doll is still happy—and there are no broken limbs or torn dresses—the child is given adoption papers and the doll is hers to keep.

Tampa merchants donate all their slightly defective and display toys—and many of their new ones. Those needing it are repaired by the WPA workers and put on the shelves with the other shop-made playthings. All toys—before they are put into use, and each time they come back from a subscriber—are disinfected and repaired for the next child.

M. Syl, who is director of the county's eight toybraries and who supervises the making of the toys, has made it an emphatic rule that no "war toys" line the shelves. Row upon row of shelves reveal everything from cotton Mickey Mouses to seesaws; but there's not a sign of a toy gun or cannon. It is interesting from the standpoint of the likes of little girls—M. Syl has found—that the soft animals enjoy equal popularity with the dolls.

Each toybrary has its own motif, designed by M. Syl, which ranges from Mother Goose and Snow White decorations in the neighborhood toybraries to figures and designs depicting Negro legendary characters in the Negro section's branch. Characters from old Spanish and Italian stories illustrate the toybrary in Tampa's Latin quarter. Toybraries have proved themselves doubly advantageous in Tampa and Hillsborough County: they raise the morale and lower the juvenile delinquency of underprivileged boys and girls, and they give artists and craftsmen an opportunity to make a living until they find a position in private industry.

ROY A. BENJAMIN, JR.

Recruiting Firemen by Scientific Methods

A MODERN SET OF RULES for recruiting firemen who know or have a knack for learning the specialized techniques of present-day fire-fighting is offered in a study just issued by Public Administration Service. Such standards are being applied in cities which no longer "visualize a fireman's job as sitting in a fire station between mad dashes to a large number of trivial alarms," the study says. Fire prevention, for example—only one of the fireman's tasks—requires more knowledge in certain branches of hydraulics than the

The Joys of a Toybrary

Barrett Tarvia
GOOD ROADS AT LOW COST

"Tractionized" Tarvia pavement is lastingly smooth and skid-safe—the kind of road motorists like to travel.

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During July we hope you will remember to mention THE AMERICAN CITY.

average civil engineer has, along with information on building construction, physics and chemistry, it is pointed out.

With tests now available for the measurement of qualities needed to make a good fireman, a number of cities have found the following procedure successful, according to the study:

1. To conduct an active search for the best qualified persons available for the fire-fighting job and encourage them to compete for appointment.

2. To reject candidates who show on their application failure to meet established standards of age, schooling, height, weight, and chest expansion.

3. To test candidates who meet these minimum standards for intelligence, aptitudes, skills and physical strength. An interview to indicate ability to cooperate with others should be included.

Part of the recruitment plan, also, is the provision for a probationary or work-test period as a final check on fitness for the fire-fighter's job. During this period, the recruit is trained and examined before permanent appointment.

Policemen Indicate Number of Traffic Deaths in Kansas City

KANSAS CITY, MO., POLICEMEN now wear arm bands which record the number of traffic fatalities to date in the current year, the International Association of Chiefs of Police has reported.

Safety officials of the city hope that this new wrinkle in traffic safety work will focus attention on the safety drive now under way in Kansas City, which was the winner of the 1939 grand prize in the National Traffic Safety Contest.

Cities Move Toward Billboard Control

TWO FLORIDA CITIES have taken unusual steps toward the elimination of billboards, the International City Managers' Association reports.

The city of Fort Myers has virtually eliminated the outdoor advertisements by a 10-cent tax on each square foot of sign surface.

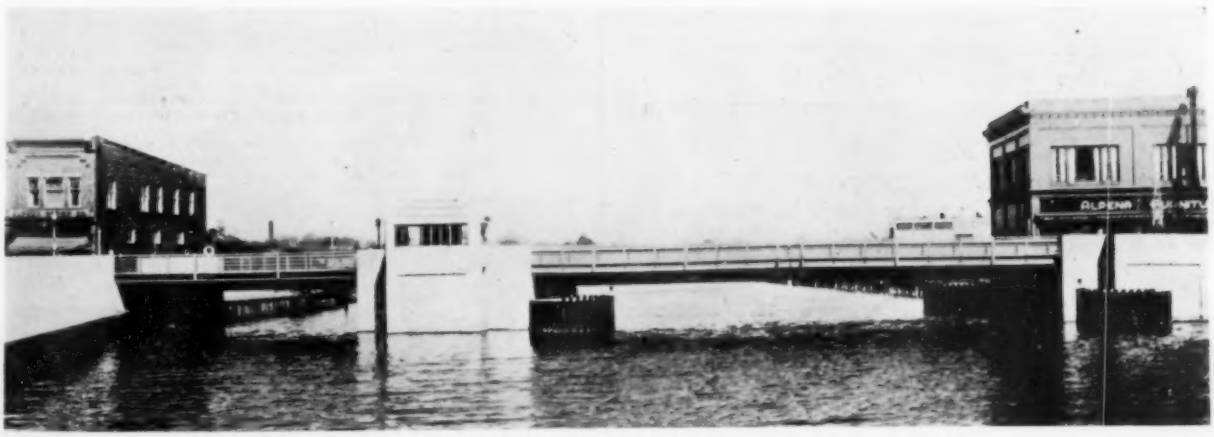
Lake Worth has prohibited all billboards within 200 feet of the street unless they are attached to a building of stable construction to withstand high winds. This ordinance, legally based on considerations of public safety, has forced down a large proportion of billboards in the city.

See also the article by ALBERT S. BARD on page 48, this issue.

City Bridges Win A. I. S. C. Awards

A FOOT bridge costing only $6,000 and a bascule bridge costing $289,000, built by cities and placed in service in 1939, won the Class C and movable-bridge awards for outstanding attractiveness in the Twelfth Annual Awards of the American Institute of Steel Construction, announced last month. The Class A award for the most beautiful monumental bridge went to the Bronx-Whitestone Bridge across the East River, New York City, designed by the Triborough Bridge Authority. No award was made for a medium-sized bridge this year.

The Class C small bridge award was made to the city of Murphy, N. C., for the Valley River Foot Bridge (see view at right), and the Second Avenue Bridge over Thunder Bay River, Alpena, Mich., built by the city, shown below, was accorded the award for the most beautiful movable bridge.



More Power!!!!

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Detailed information on all phases of parking control problems will be forwarded on request.

All KARPARK Meters are licensed under the patents of VEHICULAR PARKING Ltd.

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Does grime get on your hands?

Firemen, plant superintendents and other men who, in the course of their work, often get heavy grime on their hands will want to try this new cleanser which gets that grime off—every bit of it—yet does not irritate the skin. Handeez is the name, and a test will tell you more than a million words.

Try Handeez free: a generous sample is yours for the asking. We want you to feel the cleansing, skin-bracing action of this product. Write today.

HANDEEZ

The C. B. DOLGE Co., Wilton Road, Westport, Conn.

STEWART FENCES *for all Public Property*

• City officials throughout the country are selecting Stewart Iron and Wire Fences to beautify and protect parks, playgrounds, buildings, institutions and other public property. They know Stewart Fences provide lifetime protection at the lowest per year cost.

Other Stewart Products for public property uses comprise: Settees, steel folding chairs, wire mesh partitions, trash receptacles, flag poles, bronze plaques, and many others.

When writing for information, please mention products in which you are interested. Sales and erection offices in principal cities.

The Stewart Iron Works Co., Inc.
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Stewart IRON and WIRE FENCES

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 60 John St., New York
Paul L. Green, Chairman; Louis A. Andriacchi, Frank A. Ashe, Charles G. Beckenbach, Wallace L. Braun, Nathan Chernlack, Carl E. Fritts, Alexander A. Hayton, Otto K. Jelinek, Harry C. Koch, Merwyn A. Kraft, Franklin M. Kreml, Tracy D. LeMay, Harry E. Stedman, Robert O. Swain

Traffic Aids to Texas Municipalities

By R. O. Swain
Assistant Traffic Engineer,
Texas Highway Department

THE state of Texas is safety-conscious. An effective state safety association, a progressive group of traffic engineers, and enlightened traffic and police organizations, are laying a foundation for a program to reduce motor-vehicle accidents in the Lone Star State.

Believing that traffic engineering assistance to the smaller Texas cities would facilitate the safe movement of traffic on both streets and highways, Mr. Montgomery directed Harry S. Phillips, State Highway Traffic Engineer, to render whatever assistance was possible to those cities requesting it.

To expedite the collection of volume figures, the only basis for sound recommendations, Dr. C. W. Vickery, of the Texas Highway Planning Survey, devised a method of observing traffic by means of extremely short counts. His system was given practical application in a survey conducted in the city of Amarillo, Texas, by members of the Engineering and Police Departments in cooperation with the Texas Highway Department.

Dr. Vickery contended that, under conditions of heavy traffic, it would not be surprising if counts of one minute, particularly at intersections controlled by stop-and-go lights, would be sufficient, providing only that one such count could be obtained out of each hour or half-hour period. The chief obstacle to his proposal, Dr. Vickery believed, was the loss of time involved by traveling between intersections.

The 30-minute period was selected in order to increase the frequency of the samples. It was believed that one-minute counts, particularly at intersections controlled by stop-and-go signals, would *not* show sufficient information, since the Amarillo traffic-light cycle is 60 seconds, permitting only two different movements of traffic each minute. It was decided that it would be necessary to observe several movements of traffic flow during the course of one observation. A *five-minute* observation period was selected.

Using short counts and tall buildings, recorders are able to observe movements at six different intersections, each for five minutes, during a 30-minute period

Dr. Vickery's "time lost between stations" was overcome by placing recorders on the tops of the taller buildings in Amarillo. From certain of these buildings as many as 32 intersections could be observed without loss of time between stations. This procedure permits a recorder to observe as many as six intersections within a half-hour period, counting each intersection for a five-minute period. At one time during the survey, 24 intersections were being observed by four recorders on top of the ten-story Fisk Building. Because turning movements were obtained at each intersection, two I. B. M. recorders were necessary at each of the three intersections in the heart of the downtown business district. This procedure would have been necessary in the event that full-hour counts were made.

In those areas away from the tall buildings of the central business district, recorders were placed on motorcycles, and observations were made at stations spaced fairly close together. It was found that a maximum of four intersections could be observed each half-hour by the use of this method. The counts in these sections were for five-minute periods, but rather than being spaced equally apart, one five-minute count might be spaced two minutes from the following observation, while two other observations might be separated by five minutes, depending on the time necessary to travel from one intersection to another.

In estimating the hourly flow of traffic, the *two* five-minute counts taken within a one-hour period were added together and multiplied by six. This method of short counts in towns and cities was determined to be as accurate as making full eight-hour counts and converting them into 24-hour figures. In checking the accuracy against the full count, the error averaged approximately 3 per cent. Two intersections were off as much as 10 per cent, while one residential intersection with comparative light traffic showed a difference of 26 per cent between the actual count and the short count. Intersections carrying more than 4,000 vehicles in a 12-hour period were within 3 per cent of accuracy.

Traffic patterns for the country as a whole have been developed with an

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These are just a few of the many points of excellence making for the POPULARITY of this meter, resulting in 1939 sales of five times those of the preceding year.

Made in only ONE MODEL, ONE QUALITY, at ONE PRICE.

Let one of our representatives tell you more about this remarkable meter.

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ITS THE FASTEST HEATING KETTLE

The Littleford 84-HD Kettle contains the two patented features, "Double Heat Circulation" System and the "Screened Reservoir." These two features guarantee Faster Heating and keep a supply of materials always ready to be drawn off. It's the modern, fastest heating unit available.

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CUT MAINTENANCE COSTS 75%

Concrete slab maintenance costs can be reduced as much as 75% by the Koehring Mud-Jack Method. The Koehring Mud-Jack raises sunken concrete . . . walks, curb and gutter, driveways, streets, highways, etc., eliminating reconstruction costs. Write for the new Mud-Jack Bulletin illustrating applications and describing the Mud-Jack Method.

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MUD-JACK METHOD

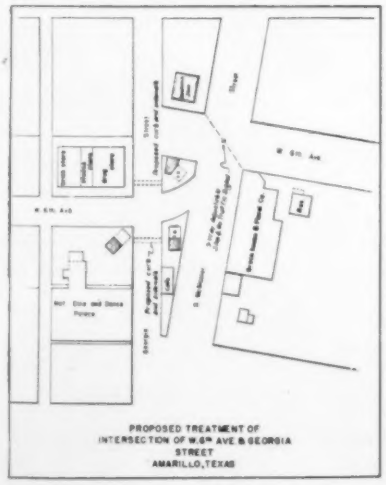
amazing degree of accuracy by Nathan Cherniack, of the Port of New York Authority. His belief that the traffic flow for the five week-days, Monday through Friday inclusive, is somewhat constant, and that traffic forms two other distinct patterns on Saturdays and Sundays, is consistent with the data developed for the Texas Highway system. The Texas Monday-through-Friday variation is 1 per cent for an average week-day percentage of 13.30. Saturdays carry 15.7 per cent of the week's traffic, while Sundays have 18.1 per cent of the traffic.

That hourly traffic flow also cuts certain patterns is another Cherniack theory which may be applied to Texas traffic. Of value in this connection is the movement of motor-vehicle traffic between 7 A.M. and 7 P.M. Between these "daylight" hours, Cherniack figures show that approximately 70 per cent of the traffic moves in both rural and urban areas. On Texas highways, according to data taken from the Highway Planning Survey's 20 automatic traffic recorders, this "daylight" percentage is 73.23. This figure is an average for all the 20 recorders during a period in 1938. There is a variation in the percentage for certain individual recorders.

The daily and hourly traffic patterns, together with the Vickery count method, constituted the primary basis for measurement of traffic flow in Amarillo. Exception was made at 21 intersections at which traffic was observed for 24 hours on each of the three daily traffic patterns. The Vickery method was used for these observations, which were made at stations so located as to be representative of the various zoning districts of the city.

Are Streets Made for Parking?

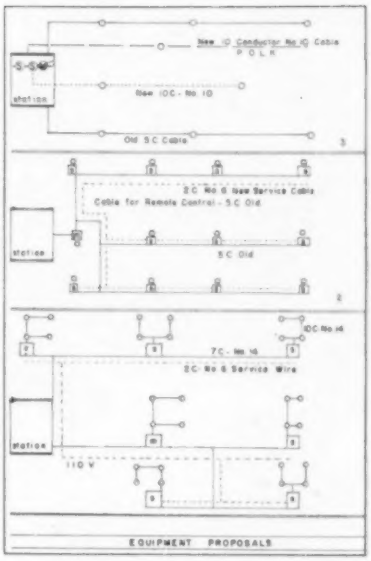
The old adage that streets were constructed for (1) movement of traffic, (2) loading and unloading, and (3) storage of vehicles, was reversed in a recommendation made to the city of Amarillo for the intersection of 6th, Georgia, and McMaster Streets. Traffic volume flow revealed that the major bands of traffic at this intersection used South McMaster Street and West 6th. Georgia Street was used very little by any through traffic. However, the distance between this street and McMaster was so short that it created a "bottle-neck" effect. Traffic was controlled by a signal light at the intersection of Georgia and 6th, and at the intersection of South McMaster and 6th. Both of these signal lights were 4-way non-adjustable.



Since the distance between Georgia and South McMaster was so short that vehicles using McMaster in place of Georgia would not be inconvenienced more than 50 feet, it was decided to block off the ends of Georgia Street as they enter into 6th, thereby reducing congestion resulting from left-turn movements out of this street and providing additional parking space for the dance hall, café, and drug store in this vicinity. This additional parking space would relieve congestion on 6th Street, which not only served as a main artery for the community business district in this area, but was a major state highway. The recommendations made to the city are expressed graphically in the sketch shown below at left.

Proposals for Amarillo's Traffic Signal Light System

Most American cities having traffic signals in their downtown area for the last ten years, are seriously handicapped in attempts to get any flexibility from such a signal system. Amarillo is no exception. Overhead suspended signal lights are fed by five-conductor cables, making any renovations costly. The recommendations made to the city for improving its signal system included three proposals. The wiring diagrams for these proposals are shown in the above sketch. The three proposals were made in order to give Amarillo immediate relief and to provide it with some plan for future development of a progressive synchronized downtown signal system. Proposal No. 1 consists of the most modern type signal installation with the following features: (1) flexible progressive traffic control system—that is, a green light at any intersection can be brought on any predetermined time with regard to the timing of a master controller; (2) two spare conductors in the interconnecting cable; (3) one spare conductor in the intersection cable after the walk lights are in service; (4) one spare interval in the timer after the walk lights are inserted; (5) provisions for any sixth interval



color cycle for a two-street intersection; (6) individual percentage time adjustment at each intersection; (7) adjustable total time cycle.

Proposal No. 2 is based on using existing signals and cable, and consists of installing individual controllers at each intersection, using the existing cables to supervise these controllers and installing service cable to give 110 volts at each intersection. The features of this system include: (1) flexible progressive system as outlined in proposal No. 1 of the preceding paragraph; (2) one spare conductor in the interconnecting cable; (3) provision for any sixth interval color cycle with two extra cables for walk light when necessary and one spare interval; (4) individual percentage adjustment of the time at each intersection; (5) adjustable total time cycle.

Proposal No. 3 is based on modernizing the existing traffic-control equipment so that the large percentage of the total time cycles can be allowed on Amarillo's main street (Polk Street), and yet the signals can be staggered in timing so as to permit the same progressive speed as obtained under the existing system. The main features of this system are: (1) progression with long percentage of time on Polk Street; (2) progressions for walk lights on Polk Street; (3) all intersections not on Polk Street to be operated on a 50-50 time division; (4) all intersections synchronized with each other; (5) one spare cable on Polk Street after walk lights are put in service.

Taylor, Texas, Attacks Parking Problem

To the many small American cities in the 5,000-10,000 population bracket

See what's happened in Illinois

"Criminal apprehensions" jumped from 33% to 65%
"Missing persons located" climbed from 51% to 86%
"Stolen cars recovered" zoomed from 13% to 83%

Superintendent of State Police Walter Williams reaches for microphone through which he speaks to any patrol car in the state. On the wall is the original blockade map developed in Illinois.

. . . with Western Electric Police Radio

The Illinois State Police have really "gone to town" in the 4 years since Western Electric Police Radio was installed.

350 officers patrol 13,500 miles of roadway—a 56,000 square mile area—offering added protection to more than 7 million persons.

Seven 1000 watt Western Electric transmitters, spotted throughout the state, send dispatches to every state police car no matter where it is.

Superintendent Walter Williams reports that radio has increased the efficiency of his force by 300% to 400%.

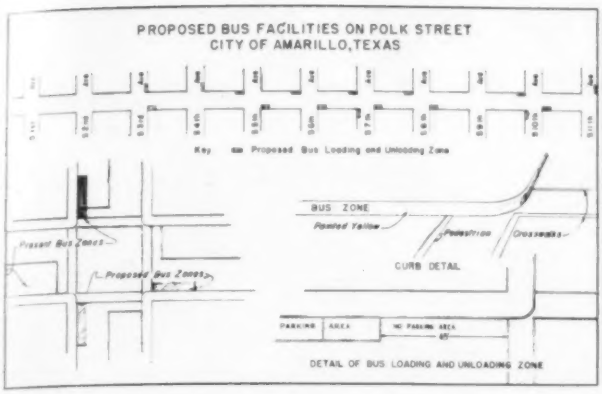
Whether *your* territory is a state, a county, a city or a small town there's Western Electric radio designed to help you police it better! Write to Graybar Electric Co., Graybar Building, New York, for details.

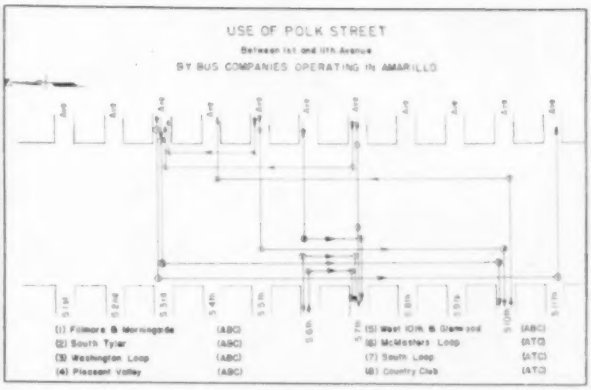
Western Electric Police Radio is giving added protection to 45,000,000 people.

Western Electric

Distributed by GRAYBAR *Electric Co.* *In Canada: Northern Electric Co., Ltd.*

POLICE RADIO TELEPHONE EQUIPMENT


PROPOSED BUS FACILITIES ON POLK STREET
CITY OF AMARILLO, TEXAS
Key — Proposed Bus Loading and Unloading Zone
BUS ZONE
Present Bus Zones
Proposed Bus Zones
CURB DETAIL
DETAIL OF BUS LOADING AND UNLOADING ZONE


USE OF POLK STREET
BY BUS COMPANIES OPERATING IN AMARILLO
(1) Fillmore & Morningside (ABC)
(2) South Tyler (ABC)
(3) Washington Loop (ABC)
(4) Pleasant Valley (ABC)
(5) West 10th & Glenwood (ABC)
(6) McMasters Loop (ATC)
(7) South Loop (ATC)
(8) Country Club (ATC)

with a Saturday population of more than 20,000 stimulated by a large farmer trading territory, Taylor, Texas, is typical. Not only were commercial trucks making deliveries by double and centerline parking on the main street, but farmers were following the same practice in loading large weekly stocks of groceries and feed. City authorities believe the following parking facilities will reduce congestion materially.

1. Use of wide, paved alleys for all commercial deliveries before 10 A.M. daily.

2. Use of same alleys by farmers picking up weekly supplies.

3. Installation of parking meters. (Taylor hopes to experiment with penny meters.)

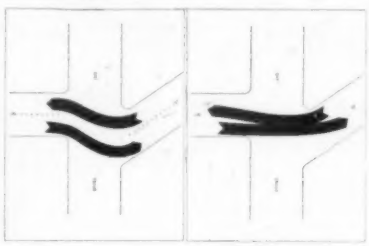
Amarillo's Bus Loading Zones

Periodical observations of traffic on Polk Street during a survey conducted by the city of Amarillo, in cooperation with the Texas Highway Department, revealed that, not only during peak traffic hours, but also during the normal traffic flow hours, bus traffic impedes traffic flow. The survey disclosed that the greatest factors retarding bus traffic on Polk Street were the manner and location of bus parking. Under the existing system, buses pull up to the curb in front of traffic-signal lights, thereby not only interfering with traffic following a bus, but obstructing the view of traffic-signal lights. Other observations made during this survey showed a great concentration of bus traffic on Polk Street between 6th and 7th. Bus traffic movements are illustrated in the above diagram.

To facilitate traffic movement on Polk Street and at the same time permit bus lines to continue on the existing routes, it was recommended that bus loading and unloading zones be renovated to conform with the diagram shown above, which calls for these zones to be placed on the opposite corners from their present location. In this manner, all traffic may pass buses parked to discharge passengers, since buses will be confined to their normal limits of the loading and unloading zone.

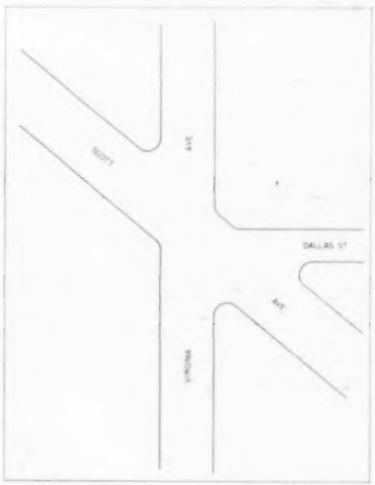
Channelization in Wichita Falls

Brook Avenue and Eleventh Street in Wichita Falls, Texas, form an offset intersection. The chief difficulty at this location was the "cutting of corners" by vehicles forming their own transitions in traveling from one side of Eleventh to the other. The traffic at the intersection was heavy enough to justify the installation of a fixed-time signal. This traffic-control device was erected before the Texas Highway Department made a survey of the city. The cycle on the signal light was split so that Eleventh Street received a green light while Brook



had a red light, etc. As can be determined by the above diagrams, this type of signal light did not eliminate "corner cutting." Following the Highway Department survey, it was recommended that centerline concrete buttons, approximately 3½ inches high, be placed on Eleventh. This form of channelization will control the turning movements on both Brook and Eleventh and eliminate possible medial friction created by vehicles on Eleventh Street "cutting corners."

Virginia, Scott, and Dallas Streets in Wichita Falls



The intersection of two streets at a right angle furnishes many traffic problems. Let those streets intersect at other than 90 degrees and throw in another street and the problems become even more complex.

Such was the situation at the intersection of Virginia, Scott, and Dallas Streets in Wichita Falls. Both Virginia and Scott Streets were major city thoroughfares; Dallas Street might be classed as a land service road. Usual practice would make Dallas Street a one-way, to drain traffic away from the intersection. Since there were no other immediate outlets on Dallas Street, this plan had to be abandoned.

Both accidents and traffic volume were sufficient to justify a traffic signal at this intersection. The arrangement of the intervals in a 70-second cycle is given in the table below. Note the small but entirely adequate interval given to Dallas Street:

	Street and Direction of Lense					Time in
Interval	Virginia So.	Scott So.	Dallas	Virginia N.	Scott N.	Seconds
I	Red	Green	Red	Rt. arrow	Rt. arrow	7
II	Red	Green	Red	Rt. arrow	Green	35
III	Green	Red	Red	Rt. arrow	Red	10
IV	Green	Red	Red	Green	Red	12
V	Red	Red	Green	Rt. arrow	Rt. arrow	6

SPHEROLITE

....gives you both effective lighting and economical maintenance!

EASY TO DETACH Spherolite glassware for cleaning or replacement in the field. Spherolite's toggle latches are easy to open, make a positive seal when closed.

EASY TO RE-LAMP the Spherolite, especially when you specify this hinge and automatic latch. Also makes it easy to clean the reflector without removing the glassware.

EASY TO SERVICE inside the hood. Supporting chain prevents detached Spherolite reflectors from dropping down while wiring, cleaning, etc.

CONVERTIBLE . . . Radial bowl and other type reflectors easily latched to Spherolite hoods without adapters. Gives your system flexibility.

Effective lighting...increased visibility at decreased cost . . . that is the operating side of Spherolite efficiency. On the maintenance side, the Spherolite's design permits the time-saving, money-saving advantage of servicing in the field. You re-lamp the Spherolite, clean its reflector, replace or clean its glassware *in the field* . . . no need to remove and return the Spherolite to the factory for such minor servicing. Why not combine this effectiveness of lighting and economy of maintenance in your next street or highway installation . . . you're sure of *both* with Spherolites.

LINE MATERIAL CO. MILWAUKEE, WISCONSIN

Outdoor Lighting

Streets—Highways—Floodlighting

An Appreciation of Street Lighting

Above—The Evaluator, Which Measures the Quality of Street Lighting

Left—Modern Lighting on a Business Street

SEEING is a major basis of progress, for without seeing objective advance stumbles. Wherever one is or goes, one must see—through his own eyes or those of another—in order to understand, learn, and enjoy, and to avoid accidents whose likelihood must be seen, and preferably foreseen.

Almost all accidents to pedestrians are caused by the impatience and non-alertness of both the pedestrians and the drivers. They happen often enough in the daytime when there is no question of sufficient illumination. Intelligent effort must be made to produce at night a quality of illumination which cannot justly be used as an alibi for mere impatience and non-alertness.

Candles and kerosene lamps have disappeared from the dwellings, gaslights have gone from the streets; but, as a rule, neither the present lighting of dwellings or of most other buildings, nor of the streets, remotely approaches what could be called modern illumination. Of necessity, most people lack scientific standards. There are so many things on which people must make decisions, that they tend to accept what is as what must be.

Low water pressure or low voltage in the home can continue for quite a while before a great many people will actively complain. A great deal of life consists of grumbling without acting. This, again, is due in considerable part to lack of standards. If the newspaper can be read, the light will do. If there are street lights, even if the lamps themselves have to be looked at in order to be believed, why then the city has street lights—so what? Is the quality of the street lighting worse than it was five years or ten years ago? Who remembers what it was then? Ought it to be improved? Who can visualize what it would be like if it were improved? This is a perfectly normal public spirit, in which no progress is possible UNLESS:

1. The toll of night traffic accidents increases to such an extent that the presence of a real menace enters the public consciousness and arouses protest.

2. Several night traffic accidents involve well-known persons and thus receive an amount and kind of publicity which achieves the foregoing result.

3. A newspaper decides that better street lighting would help the city, and crusades for it.

4. One or two merchants sell the others on the desirability of a brighter business district.

5. The municipal officials are convinced that considerably brighter streets at night would receive public approval.

6. Standards are provided by which can be demonstrated (a) the lack of adequate lighting, (b) how much light adequate light is, and (c) what equipment will provide it most economically and satisfactorily.

To rely on methods 1 to 4 above, for obtaining an adequate system of street lighting, is to rely on possibilities and hunches. It means waiting until

Modern Lighting on a Residential Street

"CLICKING" in every type of Community

INDUSTRIAL—Flint, Mich. . . . a 100% motor-minded community, keen judges of good mechanical construction. **1**

SUBURBAN—Bronxville, N.Y. . . . wealthy Westchester suburb of New York, a community which demands high standards of municipal service. **2**

AGRICULTURAL—Columbia, S. C., busy "market city" serving thousands of farmers in addition to its own 65,000 population. **3**

GOVERNMENTAL—Washington, D. C., where heavy local traffic is complicated by a continual stream of tourists and other visitors. **4**

Karpark "Automatics" find favor with all kinds of folks

Now, there's no longer reason to say: "Parking meters may be all right in some communities, but the people in our town are different." Actual experience in cities as different as Flint, Mich., Bronxville, N. Y., Columbia, S. C., Washington, D. C. shows that folks of every type and temperament approve this self-liquidating way to keep all-day parkers off busy streets, give greater convenience to shoppers, and eliminate the dangers and delays of double-parking and other parking violations.

KARPARK Meters are just one of the sound "public-safety services" made conveniently available throughout the nation through GRAYBAR . . . with experienced specialists in municipal problems to help plan an installation that will meet with public approval.

Write for Facts
on KARPARK "AUTOMATIC"

Special features found only on KARPARK Meters go far to assure acceptance and performance. For full details, along with factual evidence of results in other cities, write Graybar Electric Company, Graybar Bldg., New York.

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IN 83 PRINCIPAL CITIES

PUBLIC SAFETY EQUIPMENT

GENERAL ELECTRIC STREET LIGHTING · G.E. AND HORNI TRAFFIC SIGNALS · KARPARK PARKING METERS · WESTERN ELECTRIC POLICE RADIO · HORNI FIRE ALARM EQUIPMENT

GraybaR QUALITY Since 1869 — Distributed by GraybaR ELECTRIC COMPANY

somebody starts pushing and keeps on until the herd starts moving.

By far the soundest method is for municipal officials to take the initiative. To do this, they must know that a whole array of modern street-lighting equipment including some new light sources, such as sodium and mercury vapor lamps, has been developed to fit the new generation of traffic, merchandising, and personal taste. There is no excuse for any alert and conscientious official not knowing this. Certainly as much information is being issued to him on modern street lighting as on the advances made in any other important field within his responsibility. He is told repeatedly that inadequate street lighting contributes to traffic accidents. He knows that the marks of an obsolete system are short poles or low mounting height, upright luminaires, absence of reflectors and refractors, dark patches or shadows on the pavement between the lighting units, and just plain difficulty in distinguishing pedestrians and other vehicles. These conditions, however, are not sudden new phenomena. The drab look of Main Street's night life is a familiar scene, probably no drabber than the Main Streets of the surrounding towns and cities. The fact that the surrounding communities are equally backward in their night appearance and traffic facilities tends to be overlooked.

The world does move. All in a few years the automobile has multiplied to 30,000,000. Nearly every town is a-squirm with them, day and night. Headlights bright and dim; no curb space for a stop to unload, let alone to park; double parking; the street traffic of the new age, usually with old-fashioned traffic signals, no parking meters, no guiding lane lines, insufficient and thoroughly outmoded street lighting.

This is not the inevitable picture. In city after city during the last two or three years, even without an understanding of the inadequacy of the old street lighting, it was cast out and a modern system installed. It is not true that street lighting is steadily growing worse because kilowatt-hour consumption is less than it was ten years ago. There was a depression of great severity, and strange indeed would it have been if the cities had not trimmed services. Some of the present activity consists of restoration of service to former consumption. In doing this, not only are more or larger lamps being used, but they are being used far more efficiently through the installation of tall poles and luminaires which throw most of the light onto the pavement. In many instances where no more current is consumed than in 1929, a great deal more light has been provided; for the new equipment, like most truly efficient things, prefers to be known by its product, the light on the street, rather than by its own conspicuousness.

There are obvious requirements for street lighting: (1) in the business district the requirement is for a quality of light and appearance in keeping with modern store fronts and tremendously attractive interior commercial illumination, or as an incentive to providing modern commercial interior lighting; (2) on residential streets, the prime consideration is safety at intersections. This is not now provided anywhere, and it is doubtful if it can be provided without combining traffic signals with the street lighting, thus making safety at really dangerous intersections a 24-hour feature.

How far is the street lighting behind the times? Now we come to the matter of standards. The General Electric Co. has ingeniously developed a Street Lighting Evaluator which measures the three brightness factors influencing visibility. These are pavement brightness, obstacle brightness, and glare. The instrument is made portable by mounting on an automobile, so that the readings can be taken quickly for representative locations in the street area. Minimum visibility results from combining the least favorable pavement and obstacle brightness with the maximum glare condition. The practical purpose of this instrument is to measure existing conditions and then to make possible the design and adjustment of luminaires in order to obtain from each street condition the maximum visibility per dollar of total cost. Let us then find out how much visibility there is on the street, and how much modern equipment using the same amount of energy will furnish; finally, how much more energy should be consumed in order to have lighting really commensurate with 1940-50 conditions and outlook. For without doing this, what have you at night?

To study the second requirement—safety at intersections, councilmen or commissioners should drive their cars along the residential streets and find out for themselves where they must move slowly from intersection to intersection. There can be no better evidence than this of the need for street lights, possibly sodium vapor, and for traffic signals, possibly vehicle-actuated.

Lighting the Entrance to Divided Highways

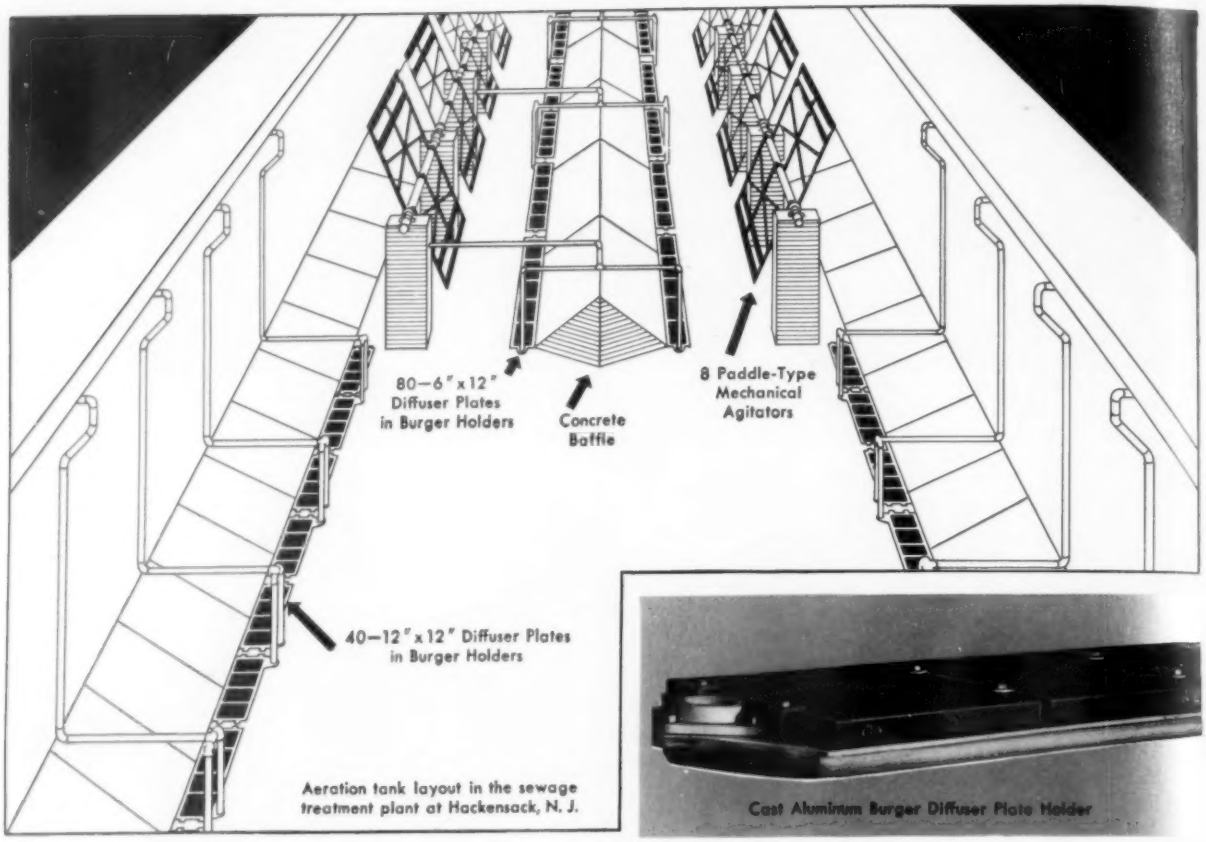
By F. M. CARTER
Assistant Safety Engineer, Division of Highways, Sacramento, Calif.

CALIFORNIA was recently confronted by the problem of providing a distinctive color for the entrance to divided highways. Tests showed that the best results were obtained when the reflected light source was: (1) visible to the approaching entering traffic at a considerable distance; (2) visible from a distance to the leaving traffic, but shielded from such traffic (to prevent "flashing the eyes") at the point of exit from the divisional island section.

The General Electric Co., cooperating with the Division of Highways, developed an inclosed-type distorted asymmetric distributing luminaire designed to keep the light out of the eyes of approaching motorists and direct it on the point of the island and the area immediately adjacent to the entrance lanes. The lamp is a 250-watt mercury vapor 10,000-lumen type H5A, which is being improved to a service life comparable with sodium vapor. The unit was mounted 18 feet above the pavement on a 12-foot trolley mast-arm fixed to a pole set 8 feet back from the point of the island. The luminaire hangs 4 feet out from the point of the divisional island on the center line extended.

The direction and spread of light is obtained with no flash or source of light visible to the entering or leaving traffic. A sign, 30 by 36 inches, with black copy on a white background reading KEEP TO RIGHT, is placed on the light standard at a height of 10 feet above the pavement. This height was determined by readings in order to place the sign in the maximum beam from the luminaire. The legibility of this sign produced by the blue-white mercury-vapor light was increased nearly 100 per cent over daylight visibility.

In order to provide extra safety, a flashing yellow beacon was imbedded in the curb at the point of the island, with a 3-inch reflector on either side.



Aeration tank layout in the sewage treatment plant at Hackensack, N. J.

Cast Aluminum Burger Diffuser Plate Holder

These aeration tanks are planned for flexible operation

This interesting installation of air diffusers and mechanical agitators is in service at the Hackensack, New Jersey, sewage treatment plant. Employment of these two mediums in different combinations, to suit variable operating conditions, makes the system extremely flexible.

A row of wide diffuser plates is placed along the side of each aeration tank, for the first third of its length. Then, an A-shaped concrete baffle divides the tank down the middle, and two rows of narrower diffuser plates flank this baffle. The action of these plates is supplemented by large paddle wheels.

Cast Aluminum holders of the Burger design simplify installation and maintenance of diffuser plates. Holders carrying five plates each are handled as units, their light weight making the job go faster and easier. Plates are removed without danger of breakage, simply by loosening several bolts; they are made air- and watertight by durable rubber gaskets. These holders are nonrusting.

ALUMINUM COMPANY OF AMERICA, 2172 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA ALUMINUM

COURTESY OF CALIFORNIA HIGHWAY AND PUBLIC WORKS

A low-mounted reflectorized KEEP TO RIGHT sign gives an additional factor of safety.

California is the first state to make use of a distinctive lighting of approach island points and channelization area. This new idea of a definite and distinctive area illumination will be a contribution to safety.

Improved Lighting More Than Saves Its Cost

By CHARLES H. REX
Special Representative, General Electric Co., Chicago

TRAFFIC ENGINEERS and safety authorities predict that during this year about 19,000 people will be killed in night accidents. Some sections of streets and highways will continue to be three, five, or ten times as hazardous to drive on at night as during the daylight hours.

The economic loss resulting from night accidents will be more than $30 per motor vehicle—will cost us more than the motor-fuel taxes we are paying to have safe highways.

Night use of our tremendous investment in modern automobiles, trucks, and an otherwise splendid system of streets and highways will continue to average only one-quarter to one-third the day volume.

Benefit to motorists in proportion to the value of their automobile and highway investment depends, to a considerable extent, on how safely, how comfortably, how conveniently, and how economically this investment can be used as a means of pleasure and transportation when and where motorists wish to use it.

Thomas H. MacDonald, Chief of the U. S. Bureau of Public Roads Administration, estimates that 70 to 75 per cent of all highway traffic is generated by social and recreational motives. Except for holidays, it is during the evening hours that the motoring public have the time and opportunity to use their cars on the streets and highways.

Good seeing conditions on a limited mileage of streets and highways will, through increased fuel consumption, produce additional tax funds with which to finance other worth-while day as well as night improvements.

An average increase in night traffic of 1,000 vehicles per night, which is small considering present night traffic on many main highway thoroughfares, means an increase in motor-fuel tax revenue per mile per year of $730. For example, US-41 between Chicago and Milwaukee has an average week-day volume of 10,000 vehicles. With a population of half a million in Milwaukee, and three-and-a-half million in Chicago, only one-third to one-fourth of the total traffic on this main interconnecting highway is after dark. Traffic engineers predict that the increase in night traffic that would result from proper lighting of this highway would average more than the 1,000 vehicles per night, and that this increase would more than pay the operating cost of the highway lighting system.

Another interesting aspect is presented in the evaluation of time lost owing to inadequate visibility. Some cities have established special speed limits, such as 25 miles per hour for night driving. With proper traffic safety lighting, a much higher degree of safety can be provided with higher speeds. Also, on highways which are unlighted and have a maximum safe speed of, say, 35 miles per hour, conditions will be much safer at speeds of 45 miles per hour with modern lighting.

Proper high-visibility lighting is vital to any well-balanced program for the improvement of the night traffic situation. The quick, certain seeing that is provided is necessary for accident prevention on a limited mileage of heavily traveled streets and highways. Traffic engineers and other investigators who have obtained the facts know that the benefits of such lighting are many times more important than the costs.

From a paper delivered at the Municipal Session of the American Road Builders' Association 1940 Convention.

New Lights in Kalamazoo

IN 1938 THE CITY OF KALAMAZOO, MICH., started making considerable increases in street lighting. Comparison with five years ago shows an increase of 151 lighting units. These include 114 highway lighting units of 4,000 to 10,000 lumens where there were none at all before. All these units are fed from underground conductors, and five of them are sodium-vapor lamps.

On all-night service we burn 24 lamps of 60 watts, 10 of 200 watts, 167 of 300 watts, and the highway lights. The other lamps burn half the night.

The present total cost of street lighting is $54,706, or an average of $36.80 per lighting unit, $1.00 per capita, $460 per mile, $0.087 per foot of the 119 miles of publicly lighted streets.

In 1940 we plan to install 8 luminaires carrying 2,500-lumen lamps, 10 of 4,000 lumens, and 32 of 6,000 lumens.

EARL E. NORMAN,
General Superintendent, City Light Department, Kalamazoo, Mich.

U. S. Flexible Joint Pipe and U. S. Mechanical Joint Pipe are widely used for submarine lines carrying water or gas, as well as for sewer crossings and outfalls—wherever ample deflection and effective resistance to corrosion are required. Stocks of pipe and standard fittings are available at 14 shipping points.

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Improving Municipal Administration

Current Items from the Public Administration Clearing House

Keeping Check on Supplies Through Inventory Control

In an Effort to apply the best business practices to government, more and more governmental administrators are establishing control of materials and supplies through inventory systems, the Municipal Finance Officers Association of the United States and Canada points out in a new manual on inventory procedure.

A number of cities, counties and states, according to the Association, have learned that accurate accounting for expenses is practically impossible without proper inventory control, and that this control furthers the most economical use of all materials and supplies. An inventory system is important to the success of centralized purchasing, the Association said, in citing the experience of one city which believed it was saving money through large quantity buying until it installed an inventory accounting system and found that obsolete materials and supplies worth $500,000 to $1,000,000 had been stored in departmental warehouses and yards.

A good inventory control system, according to the manual, requires that one office check the quantities and values of all materials and supplies received, and that these accounts be entered in the general ledger. It is also necessary to make an actual physical count of materials periodically, in order to verify the inventory records. To set up such an inventory system, governmental administrators are advised to have all requisitions for materials and supplies submitted to the storeroom in order to determine whether materials wanted are on hand. Adequate facilities, centralized where practical, are necessary for storage. Other requisites are the keeping of inventory records in the general accounting office, which should be responsible for their audit, and the keeping of a "stores ledger" sheet or card for each kind of material carried in the inventory.

Inventory accounting records should be as simple as possible and still provide the information required for effective control, the manual said. A system of inventory control for tools and material on construction and "roving" jobs is described in the manual, along with plans for financing and accounting for the operation of storerooms and storeyards.

The count and inspection of stored supplies should be a continuous process, the manual notes. Book balances showing materials on hand must be verified frequently if inventory control is to be effective.

Trend Towards More Rational Zoning Provisions

To Keep Abreast of Local Planning developments, the City Council of Evanston, Ill., has revised completely its city zoning ordinance for the second time since 1921, when the first Evanston zoning ordinance was adopted. The revision was made in an effort to adapt the ordinance to conditions which have changed since 1927—when the first complete revision was made—and to developments which the City Council thinks may appear in the future.

The new Evanston zoning ordinance reduces by 20 per cent the amount of land zoned for commercial purposes, and by 50 per cent the area zoned for multiple dwellings or apartment houses, according to the American Society of Planning Officials. Single-family homes, under the new ordinance, must be built on larger lots. The revision increased the area required for a home in the "A" zone from 4,300 to 7,200 square feet, and in the "B" zone to 5,000 square feet. The new ordinance also creates a new district in which two-family and row houses may be constructed, and requires apartment buildings, row houses and theaters to provide off-street parking facilities—one parking space for every two dwelling units, or for every ten theater seats.

The Society says other cities besides Evanston are bringing their zoning ordinances up to date, although few by such complete revision. These cities include New York City, Los Angeles, Portland, Ore., and Des Moines.

Des Moines city planning officials decided to draft a new zoning ordinance after a survey showed, in part, that the city's residence districts as now zoned are large enough for the city of Memphis or Indianapolis; that multiple-dwelling districts are large enough to accommodate apartment buildings in a city of nearly 2,000,000 people; and that there is enough area zoned for commerce to supply Minneapolis.

Such over-zoning developed years ago, when over-optimistic city officials and civic organizations had their municipalities zoned on the theory that the expansion in city growth then occurring would continue. However, most municipal expansions did not come up to expectations. Many cities now find they have large areas zoned for commercial or business purposes which cannot be used economically for business purposes; nor can they be used as residential districts, because property owners will not construct residences in areas zoned for business. It is to remedy such situations that cities are now studying their zoning ordinances with thoughts toward revision—complete revision, as in Evanston, or gradual revision, as in Los Angeles, Portland and New York City.

Business Licenses May Be Refused if Taxes Are Unpaid

Minnesota Cities have authority to enact ordinances requiring payment of delinquent personal property and real estate taxes before a license will be granted, under a recent opinion by the Minnesota attorney-general's office. Under such an ordinance, operators of businesses which require licenses must pay up all delinquent taxes before being allowed the privilege of doing business in the city, according to information from the American Municipal Association.

While the constitutionality of such an ordinance has not been passed on by Minnesota courts, decisions involving state laws indicate a tendency to uphold legislation of this kind, according to the ruling. One decision cited by the opinion was handed down by the Supreme Court of Hawaii, which held that a statute requiring payment of taxes as condition to obtaining an occupational license was valid even though it required payment of taxes that became due before enactment of the law. In answer to the argument that the statute in effect combined the taxing and police powers of the government in a manner contrary to the U. S. Constitution, the Hawaiian high court said: "There is no good reason why a single statute should not include the exercise of

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Protect Both Sport and Health by Adequate Sewage-disposal Plants

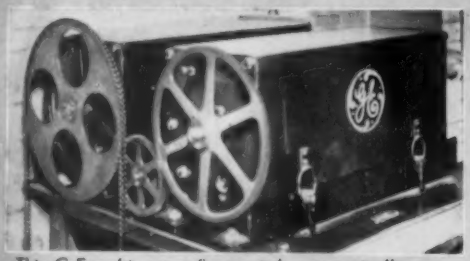
DON'T let pollution be a menace to the health and recreation of your citizens. By installing proper sewage-disposal plants, the cities of your watershed can guard the purity of their waters.

Dumping raw sewage into streams and lakes renders water supplies dangerous, destroys fish, ruins bathing places, and lowers property values along the shores. For a fraction of a cent per person per day your city can treat its sewage to eliminate these conditions.

LET OUR ENGINEERS HELP

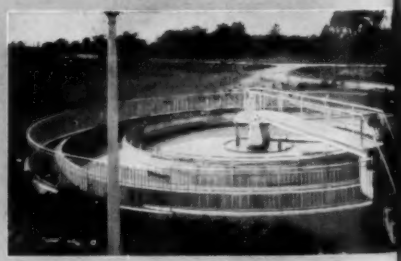
In planning a sewage plant, it's important to consider the electric equipment for operating it. Presence of corrosive or hazardous gases, for example, may necessitate special motors and control unless the plant is so zoned as to isolate the fumes. Our engineers will be glad to work out such problems with you and your consulting engineer. Just call our nearest office. General Electric, Schenectady, N. Y.

HOW G-E EQUIPMENT HELPS OTHER CITIES PROMOTE STREAM PURIFICATION



This G-E multicontact float switch automatically controls speed of pump motors in a New England plant. No attendant is needed

G-E control in this modern plant is installed in a special room (shown through window) to isolate it from the section where sewage gas may be present



Special engineering was needed to apply the motors and control to this settling tank. Whether you need a small or a giant plant, G-E engineers can help you

GENERAL ELECTRIC

011-435

both the power of taxation and the police power."

In another case, according to the opinion, it was stated that, as a general rule, "a statute denying to delinquent taxpayers civil rights not specifically secured by the Constitution is valid."

One Minnesota case cited upheld state laws of 1878 and 1874 requiring payment of delinquent taxes before a deed could be filed for record, and payment of taxes for local improvements before a deed could be recorded with the register of deeds.

The Kentucky Supreme Court, in 1935, upheld an ordinance of the city of Somerset requiring payment of "all taxes, assessments and other financial claims of the city" before a liquor license could be granted. The enactment of additional requirements had been authorized by the state alcoholic liquor control act.

The Association pointed out that 14 states require motorists to produce evidence that property taxes on their automobiles have been paid before licenses will be granted. The states are Alabama, Arizona, California, Colorado, Connecticut, Maine, Massachusetts, Montana, Nebraska, Nevada, New Hampshire, Utah, Washington and Wyoming. In addition, Maryland last year increased from 20 to more than 60 the number of cities in which a motorist will not be given a license unless he presents a receipt for his city property taxes.

Officials of the states requiring evidence of tax payments say the requirement has resulted in a substantial reduction in delinquencies involving property of this type.

Installment Payment of Back Taxes

THREE THOUSAND DELINQUENT TAXPAYERS in Richmond, Va., are paying up overdue accounts on an installment basis, according to the Municipal Finance Officers' Association of the United States and Canada. Fewer than 100 persons, however, have taken advantage of permission, given within the last year, to pay current taxes in installments.

The citizen's payments on back taxes are accepted as deposits and are applied to his tax debt only after enough has been deposited to cover the delinquent tax bill for an entire year. The plan is being used for both delinquent real estate and personal property taxes. Under a new Virginia law, delinquent personal property taxes are collectible only within a five-year period.

More than three-fourths of the cities in the United States over 30,000 population now collect property taxes in installments, according to the Association. Approximately 150 of these cities allow payment in two installments, and 53 in four installments. Of the remainder, 11 cities permit payment in three installments, and 18 permit from five to twelve installments.

Five-Day Week for Municipal Employees

SATISFACTORY WORKING OUT of a five-day, forty-hour week for municipal employees, adopted by at least fourteen cities during the past seven years, is reported in a survey by the International City Managers' Association.

Six of the cities adopted the shorter work week in 1932 and 1933. They were Chicago, Detroit, Milwaukee and Seattle, which applied the five-day week to all employees except policemen and firemen; and Sacramento and Schenectady, which applied it only to laborers working for the city.

During the following five years, all employees of Minneapolis, San Francisco, Escanaba, Mich., Reading, Pa., Rockford, Ill., and the Los Angeles Board of Education went on such a schedule, while Everett, Wash., and Cincinnati introduced the five-day week for laborers and certain other employees.

The earlier adoptions of the short week occurred when cities tried to offset necessary wage and salary reductions with reduced working hours. In nearly all the cities reporting, pay cuts were later restored, but the shorter work week was retained.

The five-day week was adopted in most instances with the understanding that there would be no increase in the number of employees, according to the report. Chicago, however, found it necessary to employ more workers in the skilled trades and crafts, Detroit added some employees in services operating continuously, such as the Water Department, and Milwaukee added some. In Minneapolis, adoption of the five-day week led firemen and policemen, who had to work seven days, to demand compensating benefits, such as additional time off or increased pay.

Most of the cities reported that the budget for salaries and wages since adoption of the five-day week has been about the same as before.

The five-day week has improved employee morale, according to the cities reporting. All say the plan is working satisfactorily. The output per employee in Schenectady, for example, is reported as great as that for the 5½-day week.

The Municipal Bond Market

The effect of conditions abroad on the municipal bond market in the United States is discussed in the June 22 issue of *The Bond Buyer*:

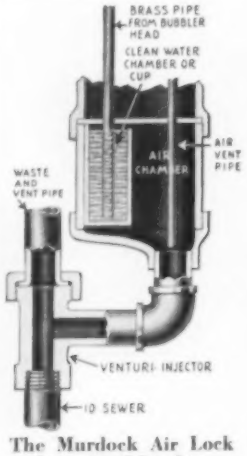
"Once again the high-grade bond market has recovered from the shock of a major disaster in Europe. In fact, the recovery from the collapse of prices which followed the news of Germany's invasion of the Low Countries has proceeded in spite of a succession of subsequent shocks, the latest of which was the news that France was suing for peace. In the municipal market, evidence of the recovery was furnished this week by the purchase and successful reoffering by a New York banking group of the $6,599,000 State of New Hampshire bonds as 1½s. This is the same block of bonds for which the best bid tendered at a public sale on May 14 was for 2's, which offer was promptly rejected. . . .

"It is not difficult to find the explanation for the market's recuperative ability. Perhaps never in the history of American finance has there been such an overwhelming supply of idle credit than that which exists today. And momentarily, at least, that condition is greatly exaggerated by the absence of anything like a normal supply of new bonds, either municipal or corporate.

"On top of this, municipals are now beginning to feel the influence of proposed heavy increases in Federal income taxes from which such bonds are immune."

Recent sales of new issues from June numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$100,000	Vernon Co., Wis., Non-Taxable Highway Improvement	1.5	2.85	.56
300,000	Stamford, Conn., Sewer	1.5	1-10 Ser.	1.45
135,000	Malden, Mass., Street Constr.	1.75	5-33 Avg.	1.57
200,000	Mahoning Co., Ohio, Poor Relief	2	1.5 Avg.	1.90
250,000	Elmira, N. Y., General of 1940, Series 1	2	9 Avg.	1.97
100,000	State College, Pa., School	2.25	15-33 Avg.	2.23
150,000	Evansville, Ind., Airport Improvement of 1940	2.5	9.66 Avg.	2.31
300,000	Dayton, Ohio, Municipal Offices Building, 1940	2.5	13.33 Avg.	2.48
400,000	Frankfort, Ind., Electric Utility Revenue	2.75	6-9.16 Prem. O.-A.	2.60
280,000	Burbank, Calif., Municipal Power Plant	2.75	1-8 Ser.	2.661
2,500,000	Buffalo, N. Y., Refunding	2.75	7.5 Avg.	2.72
135,000	Lebanon, Ohio, Electric Light and Power Plant System Extension, First Mortgage Revenue	3	5.75-10.5 O.-A.	2.73 2.73
150,000	Fifth Louisiana Levee District, La., Refunding	3	1-10 Ser.	2.994
135,000	De Soto Co., Miss., Court-House	3.25	10.75 Avg.	3.19
300,000	Denver, Colo., Airport Improvement Revenue Series A	3.75	5-11.75 O.-A. Prem.	3.75



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Is a successful modern application of the Old, Well-Known Principle of Hydraulics.

An Air Lock Does It!

Here is the most sanitary and practical outdoor drinking fountain obtainable. In this Murdock "Air Lock" Fountain is incorporated *The First Safeguard Ever Offered Against Pollution of Fresh Water Supply by Contaminated Water From Backed-up Sewer Without the Use of Any Mechanical Device.*

MURDOCK "Air Lock"

ANTI-FREEZING OUTDOOR DRINKING FOUNTAIN

The sanitary features of this fountain have been approved by eminent sanitary engineers. All inner working parts come completely and permanently assembled.

It is the sturdiest of all Murdock Fountains. Maintenance reduced to a minimum. Most sanitary and practical outdoor drinking fountain obtainable.

Write for "The Story of the Air Lock Fountain."

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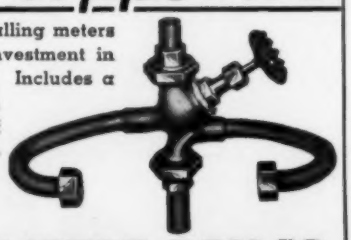

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Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Streets—Filling Station

ALABAMA.—*McCraney v. City of Leeds*, 194 So. 151 (Supreme Court, January 11, 1940).—The street in question had a so-called parkway between the street curb and the sidewalk, for ornamentation with grass, flower pots, trees and shrubs. In this parkway, McCraney had placed in front of his gasoline filling station, without the consent of the city, two gasoline pumps and air service appliances, for the use of motor cars standing alongside them in the street. *Held* that these pumps were a public nuisance, and the city could order their removal. The parking strips are a proper feature of the street, and, legally, a part of it. They may be, and often are, used for the location of poles, fire hydrants, meter boxes, etc., in connection with public utility services for the inhabitants of the city. Presumptively the owner of the abutting land owns the fee in the street land to its center, and can use it for any purpose which does not interfere with its public use. The pumps themselves are not an obstruction to traffic, but the vehicles drawn up to them are an intermittent obstruction. Such use is not legitimate parking, but use for a private business by the service station.

Eminent Domain—Private Covenants—Damages

GEORGIA.—*Anderson v. Lynch*, 3 S. E. 2d, 85 (Supreme Court, May 11, 1939).—Where all the lots in a subdivision were sold under covenants that they would be used for residential purposes only, and the county purchased one of these lots for the construction of a public road, owners of other lots did not have any such legal interest in the lot as to entitle them to compensation because of such use; and if these covenants could be construed as attempting to increase the total compensation to be paid, they would be, in that respect, against public policy and void; for private parties by agreements between themselves should not be able to increase the cost of taking property by eminent domain.

Side Yard

MISSOURI.—*State ex rel. Winkley v. Welsch*,* 131 S. W. 2d, 364 (St. Louis Court of Appeals, July, 1939).—Winkley applied for a permit to construct an automobile sales and service building upon a corner in a zoned commercial district fronting on Kingshighway and siding on Bancroft Avenue. The permit was refused by Welsch, Building Commissioner, because no side yard was being provided between the side line of the building and the line of Bancroft Avenue. Rear yards were required in interior lots only, and front yards were not required at all. The building could therefore cover the entire lot unless a side yard was in fact required by the ordinance. Winkley petitioned the St. Louis Circuit Court for a writ of mandamus requiring Welsch to issue the permit, and this was granted. Welsch appealed to the St. Louis Court of Appeals.

The question to be determined was whether or not the ordinance required a side yard 4 feet wide between Winkley's building and the north line of Bancroft Avenue.

The ordinance defined a "side yard" as "the yard between the side of the building and the lot line most nearly parallel thereto and extending from the street line to the rear yard." Winkley contended that as no rear yard was required, no side yard could be required either.

The Court of Appeals decided, in part that:

"It is the generally accepted rule of construction that, where an ordinance or statute enumerates or prescribes the particular thing upon which it is to operate, it is to be construed as excluding from its effect and operation all these things not expressly mentioned.

"Under this undisputed rule of construction applicable to ordinances, . . . since paragraph 36 of Section 1 of the ordinance requires a side yard between the building and the lot line extending from the street line to the rear yard, it cannot properly be held to require a side yard where there is no rear yard, and where the lot line on the side must run from the street line to the rear building line instead of the rear yard. . . .

"It appears . . . there is no building line of any kind established either by ordinance or by deed or agreement between private parties.

". . . This, then, would in effect establish a building line of 4 feet along the north side of Bancroft Avenue for the full distance westwardly of relator's lot. Of what good would a 4-foot strip be for this distance of 76 feet 9⅞ inches westwardly from the west line of Kingshighway?

"The construction of the ordinance as contended for by counsel for respondent would lead to absurd results."

Therefore a building covering the entire lot could be erected.

* From Chicago Regional Planning Association Notes.

Billboards—Regulation—Administrative Discretion

NEW YORK.—*Schloss Poster Advertising Co., Inc., v. City of Rock Hill*, 2 S. E. 2d, 392 (Supreme Court, April 4, 1939).—An ordinance of the city of Rock Hill provides that it shall be unlawful to erect or maintain any billboard facing on any public street or other public place within the city without a permit from the City Council.

The Schloss Company is engaged in the business of posting and displaying for hire advertisements on billboards. It applied to the city for a permit to erect four billboards upon certain lots leased by it in the city. It alleges that the proposed billboards will be safely and securely constructed; will not be on the public right-of-way of streets or sidewalks, or in any way interfere with their proper use; that since the passage of the ordinance the city has permitted, and is now permitting, other parties to erect billboards in the same section, thereby discriminating against the Schloss Company. The ordinance is attacked as being arbitrary and unreasonable.

The city answers that in each instance in passing upon an application for a permit to erect billboards the Council acted only after a careful inspection of each proposed location with reference to the public safety, health, morals and general welfare, without discrimination, and in accordance with the discretionary power reserved to it by the ordinance. It was also alleged that the erection and maintenance of billboards at the locations mentioned would be dangerous, injurious to the public welfare, a public nuisance and injurious to the public health.

Held by the Court that the ordinance is void because it does not set up any general or uniform rule for its enforcement, but makes it depend upon the arbitrary will of the governing authorities, who may exercise it so as to give exclusive profits or privileges to particular persons. Nor is it a zoning ordinance, justified under the principles applicable to such ordinance.

SIR RAYMOND UNWIN

The cause of rational town planning has sustained a great loss in the death, on June 28, of Sir Raymond Unwin—a loss which follows all too soon after the passing of his fellow countryman, Thomas Adams, recorded in THE AMERICAN CITY for April, 1940.

Sir Raymond achieved wide acclaim in 1896, as the designer of the First Garden City, Letchworth, and, later, of the Hampstead Garden Suburb. A pioneer champion of spaciousness in urban development, his pamphlet, "Nothing Gained by Overcrowding," written in 1912, and his subsequent writings, lectures and technical services have influenced the thinking of city and regional planners throughout the world.

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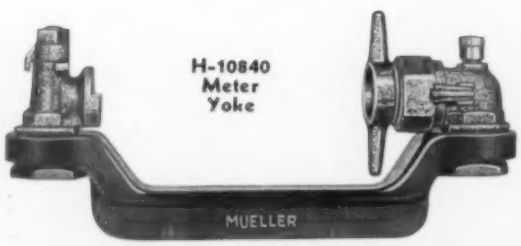

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Municipal Law Notes and Decisions

Prepared by National Institute of Municipal Law Officers, Washington, D. C.
John A. McIntire and Charles S. Rhyne, Legal Counsel

Airports—Municipal Liability for Negligence in Operation of

With the nation-wide movement for improvement of airports as a national defense measure comes a still further question for municipal consideration as to their liability for damages caused by their employees' negligence in the operation of municipally owned airports. The courts are divided on this question, and a review of all the cases may well suggest a solution to the problem by causing cities to consider it in advance of any claims for damages arising out of the operation of their airports. The majority of the cases hold that a city is engaged in a proprietary function in the operation of its airport and is liable for damage caused by negligence of city employees in such operation. The leading case expressing this view is *Pignet* v. *City of Santa Monica*, 4 Municipal Law Journal 25, 84 Pac. (2d) 166 (Cal. App. 1938), in which the city was held liable for injuries sustained through its negligence in allowing an automobile on an airplane runway, thereby causing a collision between an airplane and the automobile. In *City of Mobile* v. *Lartigue*, 23 Ala. App. 479, 127 So. 257 (1930), a city was held liable for damage to land caused by excess water draining from the adjacent airport. In *Coleman* v. *City of Oakland*, 110 Cal. App. 715, 295 P. 59 (1930), the city was held liable for negligence resulting in injury to a workman engaged in constructing an airport for the city. In *Mollencop* v. *City of Salem*, 139 Ore. 137, 8 P. (2d) 783 (1932), the city was held liable for personal injuries sustained by the plaintiff who tripped over a wire at the municipal airport.

In *City of Blackwell* v. *Lee*, 80 Okla. App. 531 (1936), the city was held liable for the value of an airplane which the city's employees negligently allowed fire to destroy.

In *Christopher* v. *City of El Paso*, 98 S. W. (2d) 394 (Tex. Civ. App. 1936), the Court held the city would be liable to a spectator injured at an air show at the municipal airport if it were proved that the city was negligent, but the Court found no municipal liability, as the city had leased the airport to an individual, so the individual was the responsible party. In this same case a Texas statute exempting cities from liability for injuries as a result of operation of airports was held to be unconstitutional, as operation of an airport is a proprietary function. In *Stocker* v. *City of Nashville*, 4 Municipal Law Journal 48, 174 Tenn. 483, 126 S. W. (2d) 339, 124 A. L. R. 350 (1939), the Court in holding valid a Tennessee statute exempting cities from negligence in the operation of municipally owned airports, reached a contrary result to *Christopher* v. *City of El Paso, supra*, and held the city not liable to a plaintiff who tripped over a wire at the city airport. In *Boulineaux* v. *City of Knoxville*, 20 Tenn. App. 404, 99 S. W. (2d) 557 (1935), the city was held not liable for damages caused by the negligence of an airplane pilot operating from the city airport where the pilot was not a city employee.

In *Mayor etc., City of Savannah* v. *Lyons*, 189 S. E. 63 (Ga. App. 1936), the Court held that the legislation authorizing the city to establish and operate an airport shows an intent that the city operate the airport as a "governmental function," so the city is not liable to the plaintiff who was thrown from a motorcycle by a defect in the road at the city airport.

In Report No. 42 of the National Institute of Municipal Law Officers, entitled "Airports and Airplanes and the Legal Problems They Create for Cities," the various methods of limiting and avoiding such municipal liability are listed and discussed. The most commonly used methods are: statutory declaration of governmental function; liability insurance; and lease agreements with users of the city airports containing requirements of insurance to protect the city. For a list of all cases on acquisition of airports by cities, see The American City, October, 1939, page 115.

Arrest Without Warrant

Information which reaches police officers by radio broadcasts to the effect that a crime has been committed, and giving the probable whereabouts of the offenders, their description, etc., was found to provide sufficient basis for an arrest without a warrant of suspected persons. *People* v. *Euctice*, 371 Ill. 519, 20 N. E. (2d) 83 (1939). See "Radio and Municipal Regulations," Report No. 62 of National Institute of Municipal Law Officers.

Civil Service

Civil service employee of city working as building inspector could be transferred to engineering department as draftsman, but his salary could not be reduced from $240 to $150 per month without preferring charges against the employee, as such reduction and removal did not comply with civil service statutes. *City of Knoxville* v. *Smith*, 138 S. W. (2d) 422 (Sup. Ct. Tenn., April 6, 1940).

Contracts

City which desired to purchase trade-name asphaltic liquid road oil because of prior satisfactory results, was obligated in good faith to permit the furnishing of other material equal in quality to it. *Kingston Bituminous Products Co.* v. *City of Long Beach*, 12 A. (2d) 237 (Sup. Ct. N. J., April 12, 1940).

Declaratory Judgments

Complaint attacking right of city to refund bonds issued for purpose of financing construction of port facilities presents a justifiable issue under the Declaratory Judgment Act of Alabama. *Lang* v. *City of Mobile*, 195 So. 248 (Sup. Ct. Ala., April 4, 1940).

Electricians

An ordinance of city of Atlanta requiring license as master electrician and passing of examination in order to obtain license is invalid as an unreasonable regulation tending to monopoly and imposing an undue burden upon those engaged in the business of electrical contracting. *Sullivan* v. *Johnson*, 7 S. E. (2d) 900 (Sup. Ct. Ga., March 14, 1940).

Firemen—Injury to

City is not liable to fireman injured in collision between two fire trucks in accident occurring within city limits. Even though on some occasions the city furnishes fire protection to other communities for a consideration, it is not engaged in private business in maintaining its fire department. *City of Indianapolis* v. *Butzke*, 26 N. E. (2d) 754 (Sup. Ct. Ind., April 22, 1940).

Home Rule—Statute Affecting

Home rule provisions of city of Denver charter do not deprive state of all jurisdiction over the city in matters of local and municipal concern. In case where the city has not exercised authority to legislate by amending its charter to establish a housing authority, the state has the legal right to establish such an authority by appropriate legislation. *People ex rel. Stokes* v. *Newton*, 101 P. (2d) 21 (Sup. Ct. Colo., March 25, 1940).

Indebtedness—Vote on

Housing Authority created pursuant to statutory authority for rehabilitation of congested city areas is a municipal corporation entitled to incur indebtedness without approval of the voters. *Cox et al.* v. *City of Kinston*, 8 S. E. (2d) 252 (Sup. Ct., N. C., April 19, 1940).

Licenses

Where undisputed evidence shows that defendant had no interest in dry-cleaning business but was operating it as employee of duly licensed owner, conviction of conducting such business without license must be set aside. *Childrey* v. *City of Atlanta*, 7 S. E. (2d) 919 (Ct. of App., Ga., March 13, 1940).

Public Utilities

City of West University Place has authority to enact ordinance requiring electric utility company operating under a consent franchise to pay 4 per cent of its annual gross receipts as a street rental. *Fleming* v. *Houston Lighting & Power Co.*, 138 S. W. (2d) 520 (Sup. Ct. Tex., April 3, 1940).

Solicitors

Ordinance requiring license fee of $20 per quarter for solicitor who had been in business at least one year, and $100 per quarter for one who had been in business less than a year, is discriminatory and void as denying the equal protection of the laws in making a distinction based on the length of time a solicitor is in business. *Soares* v. *City of Santa Maria*, 100 P. (2d) 1108 (Dist. Ct. of Appeals, 4th Dist., Calif., March 29, 1940).

Taxation

City is not liable to owner of premises for damages resulting from the negligence or intentional omission of receiver of rents and income, appointed under statutes dealing with receivership of property, to enforce collection of delinquent municipal taxes, even though receiver acted on advice of counsel representing city. *Ballard* v. *Park Place Land Co.*, 12 A. (2d) 247 (N. J. Ct. Chancery, April 9, 1940).

Torts—Municipal Liability Where No City Funds to Repair

It was held to be no defense to liability of the city for a defective condition of the sidewalks that the city at the time of the suit had no funds with which to make the repairs necessary to put the street in a safe condition. *Tarrant City* v. *Dorr*, 191 So. 214 (Ala. June 15, 1939).

Water Rates—Legislative Function

Power to fix and regulate water rates is a legislative or governmental power, and a council cannot by contract for lease of water-works property to a fair association obligate itself to supply free water service during the term of the lease. Such a provision is void, and the Mayor and Council may be mandamused to collect sums due for water furnished. *Screws* v. *City of Atlanta*, 8 S. E. (2d) 16 (Ga. 1940).

City Radio Regulation

Radio and Municipal Regulations.—Prepared by John A. McIntire, Executive Director, and Charles S. Rhyne, Attorney, National Institute of Municipal Law Officers, 730 Jackson Place, Washington, D. C. 1940. vi + 44 pp. $1.00.

Municipal regulations affecting radio are summarized in this study, which contains selected city and model ordinances. Covered are regulations to prevent interference of reception; interception and use of police radio message by "racketeers"; "noise" prohibitions; examination and licensing of radio repairmen; regulating, installation and construction of radio equipment and antenna.

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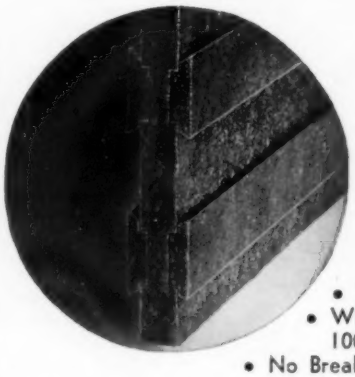

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Municipal and Civic Publications

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Pavements

Flexible Pavements: Influences Affecting Present-Day Design of Pavement and Base.—By Bernard E. Gray, Chief Engineer, The Asphalt Institute, 801 Second Avenue, New York. 1940. 16 *pp.*

So-called flexible types of pavement, our oldest types of pavement, constitute 64 per cent of the total. This monogram gives the answers to questions sent to state highway departments on practices in the construction of such pavements. General trends are summarized.

Street-Construction Specifications

Revised Specifications for Slow-Curing Liquid Asphaltic Road Materials.—The Asphalt Institute, 801 Second Ave., New York. 1940. 4 *pp.*

The general requirement for slow-curing road materials given in table form in this leaflet incorporate the same system of viscosity limits developed in "Revised Specifications for Cut-Back Asphalts," for medium- and rapid-curing products.

Water-Works Publications

Index to the Proceedings, Journal and Other Publications of the American Water Works Association, 1881-1939 inclusive.—The Association, 22 E. 40th St., New York. 1940. 285 *pp.* $1.75 *to members; $2.00 to non-members.*

A well-organized volume, containing Author Index and Subject Index, with a guide to cross references.

Housing—Legal Basis

A New Remedy for an Ancient Evil.—By Vance G. Ingalls, Assistant Corporation Counsel, City of Detroit. Citizens' Housing and Planning Council of Detroit, 1719 Penobscot Bldg., Detroit, Mich. 1940. 13 *pp.* 25*c.*

Summary and interpretation of court decisions made in the United States, in relation to housing and slum clearance—on the questions of condemnation for housing, tax exemption, housing as a public purpose, housing authority bonds being outside the debt limit, and the many other legal aspects of the subject that have been passed on by the courts. Pertinent portions of decisions are quoted.

City Finance

Financial Statistics, Cities Having a Population of over 100,000, 1937—Summary Bulletin.—Bureau of the Census, U. S. Department of Commerce, Washington, D. C. Apply to U. S. Government Printing Office, Washington, D. C. 1940. 30 *pp.* 5*c.*

Tables giving summary financial data for individual cities of over 100,000 population, for 1937, covering: general government—cost payments, indebtedness, assessed valuations, property tax levies; and public-service enterprises—revenues and cost payments.

Recreational Study

Recreational Research.—By G. M. Gloss, Associate Professor, School of Health, Physical Education and Recreation, Louisiana State University, Baton Rouge, La. 1940. 63 *pp.* $1.00.

An overview of what has been happening in and thought about recreation in recent years is what this pamphlet gives the reader. More than 300 publications in this rapidly developing field are abstracted, and trends which they indicate are pointed out. The manuscript is divided into the following broad classifications: History and Recent Trends; General Sociological Effects; Youth and Leisure; Recreation and Education; Public Recreation; Economic Effects; Professional Aspects; Personal Health and Recreation.

Manager Government Appraised

City Manager Government in the United States. xvi + 279 pp. $2.50. City Manager Government in Nine Cities. viii + 344 pp. $3.50.—Both by Harold A. Stone, Don K. Price, Kathryn H. Stone.

City Manager Government in Seven Cities. —By Frederick C. Mosher, Arthur Harris, Howard White, John A. Vieg, Landrum R. Bolling, A. George Miller, David G. Monroe, Harry O'Neal Wilson. x + 448 pp., $3.50.

The three books published for the Committee on Public Administration of the Social Science Research Council by Public Administration Service, 1313 E. 60th St., Chicago, Ill. 1940.

The city-manager plan of government has been called the most significant social invention in government of the 20th century. Now operating in more than 500 cities in the country, it has been functioning for over 25 years. The first of these volumes contains a report of a study and appraisal of the results and operation of the plan in 48 cities of different sizes and types, in all parts of the country. The origin and development of city manager government are outlined, and administration and politics in the 48 cities before and after its adoption are compared. The second volume contains the case studies, heretofore published as separate pamphlets, of the nine individual cities: Janesville, Wis.; Charlotte, N. C.; Fredericksburg, Va.; San Diego, Calif.; Jackson, Mich.; Dallas, Texas; Lynchburg, Va.; Austin, Texas; Kingsport, Tenn. The third volume contains seven of the case studies of city manager cities made by volunteer professors and graduate students of political science at universities throughout the country: Rochester, N. Y.; Berkeley, Calif.; Hamilton, Ohio; Ames, Iowa; Dayton, Ohio; Long Beach, Calif.; Winnetka, Ill.

See "The City Manager Plan Will Endure," by Richard S. Childs, on p. 35 of the May, 1940, issue of THE AMERICAN CITY, for further discussion of the books.

Education and Prosperity

Education and Economic Well-Being in American Democracy.—Educational Policies Commission, National Education Association of the United States and the American Association of School Administrators, 1201 Sixteenth St., N. W., Washington, D. C. 1940. *vi* + 227 *pp.* 50*c.*

Among the many phases of life which are influenced by education is the economic one. This study penetrates the broad interrelationships of education and economic well-being, analyzing the effect of education on productivity and the national income. It points out the kind and amount of general and occupational education which is needed for the most beneficial effect on economic well-being, and present lacks and inequalities in the country's educational system, and recommends a future program of action, with estimated costs and means for financing the program and putting it into action.

Employment

Employees and Pay Rolls of Small Cities, Towns, and Villages, January, 1940.—Bureau of the Census, Dept. of Commerce, Washington, D. C. 28 *pp.*

The May issue of THE AMERICAN CITY listed a bulletin similar to this giving figures of cities of over 10,000 population. This bulletin gives figures for 939 cities of between 2,500 and 5,000 and under 2,500 population. Figures in table form give total number of employees in each city, as well as number of permanent and temporary employees in general government functions, and number in public-service enterprises. Total payrolls for the month of January, 1940, and the calendar year, 1939, are given for both types of employment.

City Recreation

Introduction to Community Recreation.—Edited for the National Recreation Association by George D. Butler. McGraw-Hill Book Co., Inc., New York. First edition, 1940. *xiv* + 547 *pp.* $3.50 *from* THE AMERICAN CITY.

"A comprehensive volume interpreting community recreation, its significance, functions, objectives, program content, methods of operation, and relationships"—the first of its kind, long needed, and now particularly so with the increasing importance of leisure and recreation. It is especially concerned with recreation by governmental agencies, and treats it as a function of local government. The seven principal parts cover: Recreation—Its Nature, Extent, and Significance; Leadership; Areas and Facilities; Activities and Program Planning; The Operation of Areas and Facilities; Program Features and Services; Organization and Administration Problems. Different types of recreation programs in representative cities are described.

Public Welfare

Public Assistance, Volume I—American Principles and Policies.—By Edith Abbott, Dean of the School of Social Service Administration, University of Chicago. The University of Chicago Press, Chicago, Ill. 1940. *xviii* + 894 *pp.* $4.50 *from* THE AMERICAN CITY.

Presentation of the basic principles and policies of the system of public assistance in this country today is particularly needed at a time when the program has been enormously enlarged, and revolutionized from a "pauper relief" administered by local units to the present set-up, largely centralized in the Federal Government. A general discussion introduces each of the five main parts of this book: The Principle of Public Responsibility; The Old Poor Law in the Twentieth Century; Local Responsibility and Medical Care; State Grants-in-Aid for Public Assistance; Federal Aid and Emergency Relief. Following, in each part, are supplementary documents from statute books, official reports, judicial opinions, and various state papers. Work relief and other new forms of public aid that have developed since the Social Security Act became effective will be treated in Volume II.

Police Bibliography

A Selected Bibliography of Available Police Literature. — International Association of Chiefs of Police, 1313 E. 60th St., Chicago, Ill. Second Edition, 1939. 17 *pp.* 50*c.*

246 titles under the following headings: Police Organization and Administration; Police Personnel; Police Training; Police Procedure; Records, Measurements, and Statistics; Communications; Criminal Investigation; Identification; Traffic Enforcement; Criminology and Criminal Justice; Crime Prevention and Juvenile Delinquency; Pensions; Bibliographies; Periodicals.

Neighborhood Shopping Centers

Community Shopping Centers.—Reprint from the June, 1940, issue of the ARCHITECTURAL RECORD, *115-119 W. 40th St., New York. pp.* 100-120.

"Park-and-shop" centers have in recent years been growing up in outlying residential areas all over the country. Principles for planning shopping centers are outlined concisely, with the aid of diagrams, in the first part of this article, "Developing the Shopping Center," by C. Earl Morrow, Planning Engineer, Regional Plan Association. They cover such factors as over-all dimensions, parking, location, allowing for expansion, and other practical considerations. Local experience of several particular centers is described and pictured by a real-estate editor of the Los Angeles *Daily Times.*

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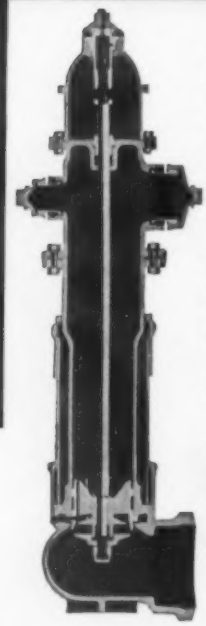

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Library Survey

The Library Survey—Problems and Methods.—By E. W. McDiarmid, Jr., Associate in Library Science, University of Illinois Library School. American Library Association, Chicago, Ill. 1940. *xv* + 243 *pp.* $3.50.

In an age of planning and science, the survey and its relatives are assuming constantly more importance. This compact, well-organized volume deals with the library survey—"the means to a critical examination of the library and its services." It describes different methods of surveying library functions, and includes examples of representative surveys. Topics covered; community backgrounds for library service; finance; administration; personnel; collections; library use; surveying the community for potential library use; preparing the report and disseminating the findings.

Libraries and Business

Business and the Public Library—Steps in Successful Cooperation.—Edited by Marian C. Manley for the Public Business Librarians Group of the Special Libraries Association. Apply to the latter, 31 E. 10th St., New York. 1940. 83 *pp.* $2.00.

A short book well packed with practical information on establishing and promoting successful library services to business—this manual is a compilation of contributions by librarians in business departments and branches of libraries. It describes the purposes, organization and administration of business departments and branches, and the experience of individual libraries in serving business. Suggestions are made for effective public relations, for building and using collections, and for cataloging, classifying and indexing material. Included is a bibliography, a list of new book and pamphlet information sources, and of references for use in organizing a business department.

Child Welfare

Children in a Democracy—General Report adopted by the White House Conference on Children in a Democracy, Jan. 19, 1940, Washington, D. C. 86 *pp.* 20*c.*

Nearly one-third of the population of the United States is composed of children. The needs of this large sector of the population, and the problems connected with these needs, are the subject of this broad, comprehensive analysis. The general situation is compactly described, and recommendations are made with respect to the many phases and institutions of American life that touch the child—for example, the family, education, religion and health.

Public Revenues—Alcoholic Beverages

Public Revenues from Alcoholic Beverages, 1939.—Distilled Spirits Institute, Inc., National Press Bldg., Washington, D. C. 1940. 55 *pp.*

Revenues from alcoholic beverages are described and summarized for each state, including local collections. Totals are given for all states for each type of fee or tax, and grand totals for 1939, as well as for the last six years.

Youth Problems

The Community and Its Young People.—By M. M. Chambers. Prepared for the American Youth Commission. Apply to the American Council on Education, 744 Jackson Pl., Washington, D. C. 1940. 36 *pp.*

In the average community of 10,000 population, there are 1,600 young people of 16 to 24 years of age. This sector of the community has its own special problems and needs, especially that group of 360 out of the 1,600 young people who are unemployed and wanting work. It is with this community problem and the means of meeting it that this pamphlet is concerned. It discusses youth surveys; means for finding jobs for youth; provisions for education, health and recreation for youth; and the place that local government, non-governmental agencies and youth itself have in helping to solve the problem.

New England City Government

New England Town Meeting—Safeguard of Democracy.—By John Gould of the town of Brunswick, Maine. Stephen Daye Press, Brattleboro, Vermont. 1940. 61 *pp.* $1.00.

Aptly chosen photographs and brief text take the reader of this small book to a New England town meeting. Notices of the meeting are posted; meeting day arrives and everything closes down; townspeople—men, women and children—arrive by car, boat and even carriage; meeting begins, discussion ensues, appropriations are voted on, selectmen are chosen—"there are two sides to every question, and the majority rules"; dinner is served and a dance takes place in the evening. Local government is real and important: everyone takes part.

Business Development

A Statistical Study of the Drawing Power of Cities for Retail Trade.—By John Adams Pfanner, Jr., Assistant Professor of Marketing, University of Nebraska. The School of Business, University of Chicago. Apply to the University of Chicago Press, Chicago, Ill. 1940. *xii* + 81 *pp.* $1.00.

This study analyzes statistically, for a selected group of cities, the volume and relative importance of non-resident trade for jewelry, silverware and clocks; women's apparel; furniture; and automobile accessories. It determines the effect of the size and location of the city on this drawing power for three of these commodities in 90 cities. Finally, differences in the drawing power of individual cities for the three commodities are measured, and reasons for the differences are discussed.

City Manager Government

The National Municipal League, 299 Broadway, New York City, has recently issued several publications on phases of the manager plan and the way it is working in individual cities. Among them are:

How Council-Management Government Is Working as Described by Newspapermen in 30 Cities. 1940. 32 *pp.* 25*c.*

When Yonkers, N. Y., was considering the adoption of the city manager form of government, Oxie Reichler, managing editor of the Yonkers *Herald-Statesman*, wrote to newspaper editors in cities having the manager plan, asking for articles reporting on the way this form of government is working out in the respective cities. The 30 articles received in reply were sent to each contributing newspaper, and published in the *Herald-Statesman*. They are reproduced in this pamphlet exactly as originally published.

Manager Plan Abandonments — Why 25 Communities Shelved Council-Manager Government. 1940. 46 *pp.* 25*c.*

The city manager form of government is in itself, of course, no guarantee for good government. Nor is the fact that it has been abandoned by some cities an argument against its advantages. In this pamphlet are analyzed the reasons why cities have abandoned the plan—reasons not inherent in the form of government itself. Their presentation serves as a guide to other cities in how to keep the plan working successfully.

What Happens to Labor under the Manager Plan. 1940. 8 *pp.* 5*c.*

Reports from labor leaders in manager cities on what this form of government has been able to do for labor.

What Happens to City Employees under the Council-Manager Plan. 1940. 4 *pp.* 5*c.*

A brief report of a survey which shows how city employees have profited by the manager plan of government in their cities.

City Christmas Decorations

Public Christmas Decorations in North Carolina Cities.—North Carolina League of Municipalities, Raleigh, N. C. 1939. 7 *pp.* 10*c.*

Answers to a questionnaire from 40 North Carolina cities describing the sort of public decorations used at Christmas time; the sponsors; costs; and amount of contribution, if any, that is made toward these costs by the city.

City News

Newspaper Reporting of Public Affairs.—By Chilton Bush, Ph.D., Executive Head, Division of Journalism, Stanford University. D. Appleton-Century Co., Inc., New York. Second Edition, 1940. *xi* + 455 *pp.* $3.00 *from* THE AMERICAN CITY.

"An advanced course in newspaper reporting and a manual for professional newspaper men"—this book describes briefly operations of public business in the community. It not only provides background material and information for the reporter, but shows, with the aid of numerous specimen news stories, how reporting of the public business can be made live and appealing to readers. Five chapters deal with the courts and trials. One chapter discusses the city hall. Others cover bankruptcy proceedings, the Federal Building, police station, county building, politics, business news, corporate finance, local bank statements, labor news.

Land Economics

Land Economics.—By Richard T. Ely, Honorary Professor of Economics, University of Wisconsin, and George S. Wehrwein, University of Wisconsin. The Macmillan Company, New York. 1940. *vii* + 512 *pp.* $4.00 *from* THE AMERICAN CITY.

This is one of the Land Economics Series, and deals comprehensively with the broad fundamentals of the subject. The first chapter on land and population is followed by a discussion of the use of land within physical, institutional, and economic frameworks. The rest of the book deals with the application of these uses to various types of land and natural resources: agricultural land; agricultural land tenure and soil conservation; utilization of arid lands; forest land; the environment and recreational land; water resources; mineral and power resources; urbanization and urban land; conservation and social control over land.

Building Code

Uniform Building Code, 1940 Edition.—Pacific Coast Building Officials' Conference, 124 W. Fourth St., Los Angeles, Calif. 370 *pp.* $1.00.

Prepared in cooperation with practically all other organizations and individuals interested in the problem, this uniform building code is presented in convenient and usable form, with detailed table of contents and index. The 1940 edition contains revisions and additions approved at the 17th annual meeting of the Conference, held last October.

Municipal Personnel

Compensation on Abolition of Office.—By L. Hill, General Secretary, National Association of Local Government Officers, 24, Abingdon St., Westminster, S.W.1, London, England. 1940. 62 *pp.*

The history of the long fight in England to bring about provision of compensation upon abolition of office or direct pecuniary loss as a consequency of legislative action, is described in this pamphlet, which also contains sections of acts providing for compensation. The granting of such payment is based on the same principle as payment for land taken by condemnation. Illustrations, printing, paper, and general design of the pamphlet are distinctly artistic.

School Equipment

Central Sound Systems for Schools.—Committee on Scientific Aids to Learning, National Research Council, 41 E. 42d St., New York. 1940. 69 *pp. Free to school teachers and administrators.*

A sound system which records and distributes to school classrooms school-made sound and radio and victrola programs, has tremendous potentialities for education. But an ineffective system, or a system installed where it is not needed, "can be a white elephant and a pain in the budget." This report is written to help administrators in selecting equipment satisfactory to their purposes. It points out advantages and disadvantages of a central sound system, describes the facilities provided and the technical aspects, and presents sample specifications.

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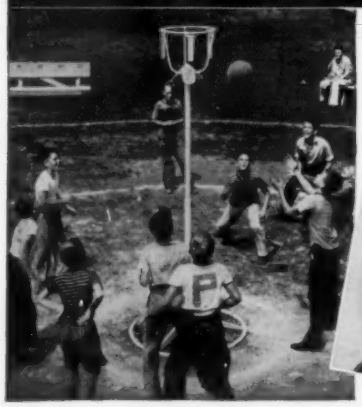

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Zoning for Billboard Control

Will California Outsmart Florida?—By Mrs. W. L. Lawton, Chairman, National Roadside Council. Reprint from FLORIDA, *Feb.*, 1940. 4 *pp.*

Retroactive Zoning for Billboard Control. 1940. 1 *p.*

Both by the National Roadside Council, 119 E. 19th St., New York.

The first of these leaflets describes the zoning measures adopted in different parts of California to preserve scenic beauty along the highways, points out the value of such zoning as an investment in attracting tourists to the state, and suggests means for accomplishing similar control in Florida. The second leaflet describes retroactive zoning in Arlington County, Virginia, and points out its advantages.

Housing and Land Use

Real Property Survey and Low-Income Housing Area Survey of Greater Little Rock, Ark.—WPA project, sponsored by Pulaski County Planning Board. Apply to the Board, Little Rock. 1940. 124 *pp.*

This fully illustrated publication reports in detail the purpose, scope, method of procedure, and results of the elaborate real property and low-income housing survey made in Little Rock. The two principal aspects of the real property study give information on land use; and on residential structures and dwelling units—type and construction, condition and age, presence or absence of modern conveniences, and data about persons occupying these dwellings. The low-income housing area survey gives additional data on composition, income and expenditures for household facilities, of families eligible for low-rent housing.

Home Rule

The Problem of Local Legislation in Maryland.—By V. O. Key, Jr., John Hopkins University, for the Maryland State Planning Commission and the Maryland Legislative Council. Apply to the Council, 311 City Hall, Baltimore, Md. 1940. 18 *pp. Free.*

Over 50 per cent of the bills adopted at regular sessions of the General Assembly in Maryland concern individual cities, towns or counties. Many of them involve such trifling matters as the amount of award for killing a wildcat in such and such a county, or the raising of the salary of a court stenographer from $1,200 to $1,500 in another county. How to reduce the amount of local legislation handled by the General Assembly by delegating the power of local legislation to the counties and cities, is the subject of this report and a subsequent report to follow. It points out the disadvantages of the present system, and means which are legally possible for broadening the discretion of county and city governments.

Research Reports

The Research Department of the Illinois Legislative Council, Springfield, Ill., has recently issued three reports giving information about problems concerning which the General Assembly may be called upon to act:

Ownership of Real Property in Illinois by Non-Residents of the State—Publication No. 20. 1940. 13 *pp.*

This report analyzes the problem of ownership of property by persons who do not contribute to the support of the state government, describes the extent of such ownership in Illinois, and appraises the pros and cons of the issue.

Installment Payment of Current Property Taxes—Publication No. 23. 15 *pp.*

Installment of property taxes in Illinois and other states, in cities and counties, is described in this publication, and the advantages and disadvantages of the method are presented.

Electrical Roll-Call Devices in Legislative Bodies—Publication No. 24. 17 *pp.*

These devices and their use in other states are described, and the arguments for and against their adoption are analyzed from the point of view of time and money saved, constitutionality, and experience with them.

Long-Term Budgeting

Programming Public Works.—Tennessee State Planning Commission, Nashville, Tenn., with the aid of the WPA. 1940. *vi* + 150 *pp.* $1.00.

The Tennessee State Planning Commission sponsored a project which had as its purpose to assist local governments of the state in the preparation of six-year programs of public works. This report of the project discusses the general theory of, and reasons for, planning and public works programming; considers some of the economic and social factors—such as land and population—which must be considered in programming in Tennessee; summarizes briefly the programs drawn up by local governments; and makes conclusions and general recommendations.

English Housing Management

4,000,000 Tenants.—A Study of English Public Housing Management.—Managers' Division, National Association of Housing Officials, 1313 E. 60th St., Chicago, Ill. 1940. *viii* + 91 *pp.* $2.00.

With the success of the housing program in this country now largely dependent on management, and American experience in this field limited, it is well to know what has been done in other countries. This is a report of management practices in selected English cities, with some suggestions on the application of English methods in our country. It discusses: Personnel; Tenant Selection and Tenant Relations; Allocation and Segregation; Rents; Community Activities; Ground and Buildings; Costs. Illustrations, tables and specimen materials are included.

Cleveland Planning

Cleveland Regional Geodetic Survey, Report No. 1.—By A. Jarvis Sweet, Director, Official Mapping and Surveys Committee, Regional Association of Cleveland, Ohio. 1939. 70 *pp.*

The geodetic survey being made of Cleveland is of equal interest to other cities because of the way it is being conducted and because of its value for planning the city. It is being carried out through the joint cooperation and sponsorship of 12 public and semi-public agencies. Its purpose is to provide all information relating to the surface of the ground and to the improvements thereon, and the work is divided into two main parts, the topographic survey and the control survey, both of which are described here for as far as the work has gone.

County Government

County Government and Administration—A Manual and Syllabus.—By Russell H. Ewing, Department of Political Science, University of Denver. School of Commerce, Accounts, and Finance, University of Denver, Denver, Colo. 1940. 100 *pp.*

That neglected institution, county government, is the subject of this syllabus, which has been used in educational courses and conferences on government. Presented in outline form, and containing 14 pp. of bibliography, it covers comprehensively the principles, problems and processes, organization, functions and control of county government.

Tax Forum

Illinois Tax Problems.—Illinois Tax Commission, 33 N. La Salle St., Chicago, Ill. 1940. *xii* + 423 *pp.*

Contained in this volume are the proceedings of an open forum on taxation and tax problems in Illinois, held in Chicago last December, sponsored by the Illinois Tax Commission, and participated in by taxpayers, tax-administrators, public officials, and representatives of taxpayers' groups, civic organizations, and educational institutions. It covers talks and discussions on Illinois tax problems of imminent importance today, including government costs, citizens' organizations, financing urban government, expenditure problems, delinquency and tax-collection problems, and improvements needed in the general tax system and in different types of taxation.

Hospital Insurance

Non-Profit Hospital Service Plans.—By C. Rufus Rorem, Ph.D., C.P.A., Director, Commission Hospital Service, American Hospital Association, 18 E. Division St., Chicago, Ill.

The movement for group hospitalization—"a non-profit, non-political application of the principle of insurance to the purchase of hospital care"—has grown by leaps and bounds in the last ten years. Many communities are now considering initiating such a plan, and to those sponsoring the step or investigating its possibilities for any community, this publication will prove helpful. It is a historical and critical analysis, which describes the principles and workings, and the origin and growth of service plans, and discusses standards, legal aspects, community sponsorship and control, rates, contracts, public relations and enrolment, organization, accounting and statistics.

Hospital Reading

Hospital Book Guide.—American Library Association and American Hospital Association. Apply to the former, 520 N. Michigan Ave., Chicago, Ill. 1940. 18 *pp.* 35c.

This is the first of a series to be published quarterly, of annotated lists of current fiction and non-fiction suitable for mentally or physically ill patients, adults or children. Included is a list of much-talked-of books which are unsuitable for such readers. Subsequent lists will occasionally be devoted to special interests, as for example, the July issue, which is of special interest to doctors, nurses, social workers and hospital personnel.

Correction

In reviews of two books in the June, 1940, issue of THE AMERICAN CITY, "Property Taxes," and "Tax Yields," the address of the Tax Policy League was erroneously given as 299 Broadway. The correct address is 907 Broadway, New York.

Other Reports Received

ASHTABULA, OHIO.—Condensed Annual Report, 1939. 8 pp.

AURORA, ILL.—Annual Report, Sewage Treatment Plant, 1939. The Aurora Sanitary District. 81 pp.

CHICAGO, ILL.—Annual Report, Chicago Police Department, 1939. 23 pp.

—Annual Report, Treasurer, 1939. 39 pp.

—Budget Report on Engineering Work, 1940. The Sanitary District. 118 pp.

CINCINNATI, OHIO—Yearbook, 1939-40; Annual Report, City Manager. 87 pp.

HAMILTON, N. Y.—Annual Report, Board of Trustees, 1939. 27 pp.

HANOVER, PA.—Annual Report, 1939. 20 pp.

NEW JERSEY—"Oh Say, Can You See?"—A Detailed Report on New Jersey's Statewide "Safety Lighting" Program.—By E. R. Sherbaum. New Jersey State Highway Department. 19 pp. 25c.

NEW YORK, N. Y.—"All the Children."—Annual Report, Superintendent of Schools, 1938-39. 88 pp., 11 by 14 in.

—Rapid Transit—An Annotated List of Selected References, 1927-1940.—Compiled by Arax Jaboolian. June 19, 1940, issue of *Municipal Reference Library Notes.* 24 pp. 20c.

PENNSYLVANIA—"Joint Purchasing and Its Possibilities for Certain Local Governments in Pennsylvania." Pennsylvania Government Administration Service, Blanchard Hall, 36th & Walnut Sts. 17 pp.

SACRAMENTO, CALIF.—Report on Street Traffic Survey, 1938-39. 166 pp.

SCHENECTADY, N. Y.—"Floodlighting Plans for Sports and Recreation." The Illuminating Engineering Laboratory, General Electric Co. 44 pp.

SALINA, KANS.—Annual Report, City Clerk, 1939. 46 pp.

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Conventions - - When and Where

Meeting is annual convention unless otherwise designated

JULY 15-20.—AUSTIN, TEXAS.
Conference in Traffic Engineering. College of Engineering of the University of Texas. Address: John A. Focht, Professor of Highway Engineering, Univ. of Texas, Austin, Texas.

JULY 23-25.—NEW YORK CITY.
New York State Association of Chiefs of Police. (Hotel Astor.) Sec.-Treas., R. W. Morris, P. O. Box 346, Geneva, N. Y.

JULY 23-25.—WILLIAMSPORT, PA.
Pennsylvania Chiefs of Police Association. (Lycoming Hotel.) Sec., F. B. Titus, Lansdowne, Pa.

AUGUST 5-8.—SPOKANE, WASH.
International Association of Fire Chiefs. (Davenport Hotel.) Sec., James J. Mulcahey, 16 Franklin Ave., Yonkers, N. Y.

*AUGUST 18-20.—COUNCIL BLUFFS, IOWA.
League of Iowa Municipalities. Sec.-Treas., Frank G. Pierce, Marshalltown, Iowa.

AUGUST 18-24.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. (Northwestern Univ.) Sec., C. R. Miles, 832 First Nat'l Bank Bldg., Chicago, Ill.

AUGUST 22-24.—LOGAN CITY, UTAH.
State Municipal League of Utah. (Eccles Hotel.) Sec., Tom McCoy, Public Safety Bldg., Salt Lake City, Utah.

AUGUST 27-30.—DETROIT, MICH.
National Shade Tree Conference. (Book-Cadillac Hotel.) Sec.-Treas., L. C. Chadwick, Ohio State Univ., Columbus, Ohio.

SEPTEMBER 5-6.—PIERRE, S. DAK.
League of South Dakota Municipalities. (St. Charles Hotel.) Sec., A. E. Mead, Univ. of South Dakota, Vermilion, S. Dak.

SEPTEMBER 9-12.—SPRING LAKE, N. J.
Illuminating Engineering Society. (Essex and Sussex Hotel.) Gen. Sec., A. D. Cemeron, 51 Madison Ave., New York.

SEPTEMBER 9-12.—MILWAUKEE, WIS.
International Association of Chiefs of Police. (Hotel Schroeder.) Exec. Vice-Pres., William P. Rutledge, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 9-12.—BALTIMORE, MD.
National Association of Assessing Officers. (Lord Baltimore Hotel.) Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 9-12.—NEW YORK CITY.
National Tax Association. (Pennsylvania Hotel.) Sec., W. G. Query, South Carolina Tax Commission, Columbia, S. C.

SEPTEMBER 11-13.—ANN ARBOR, MICH.
American Water Works Association—Michigan Section. (Michigan Union.) Sec., M. N. Gerardy, Water Board Bldg., Detroit, Mich.

*SEPTEMBER 11-13.—YORK, PA.
League of Cities of the Third Class in Pennsylvania. (Yorktowne Hotel.) Treas., Herman A. Early, City Hall, Harrisburg, Pa.

*SEPTEMBER 12-13.—BISMARCK, N. DAK.
League of North Dakota Municipalities. Address: Exec. Sec., Myron H. Atkinson, City Auditor, Bismarck, N. Dak.

*SEPTEMBER 15-19.—SEATTLE, WASH.
American Association of State Highway Officials. Sec.-Treas., W. C. Markham, 1220 Nat'l Press Bldg., Washington, D. C.

SEPTEMBER 16-17.—DENVER, COLO.
American Water Works Association—Rocky Mountain Section. (Cosmopolitan Hotel.) Sec., B. V. Howe, State Office Bldg., Denver, Colorado.

SEPTEMBER 16-19.—SAN DIEGO, CALIF.
League of California Cities. Sec., Richard Graves, 2121 Allston Way, Berkeley, Calif.

SEPTEMBER 18-20.—NEW CASTLE, PA.
American Water Works Association—Western Pennsylvania Section. (Castleton Hotel.) Sec., E. P. Johnson, 418 Flannery Bldg., Pittsburgh, Pa.

*SEPTEMBER 19-21.—NEW YORK CITY.
United States Conference of Mayors. Exec. Dir., Paul V. Betters, 730 Jackson Place, N. W., Washington, D. C.

SEPTEMBER 22, WEEK OF.—WHITE SULPHUR SPRINGS, W. VA.
American Transit Association. (Greenbrier Hotel.) Gen. Sec., Guy C. Hecker, 292 Madison Ave., New York.

SEPTEMBER 22-24.—ROANOKE, VA.
League of Virginia Municipalities. (Hotel Roanoke.) Exec. Sec., Morton L. Wallerstein, 902 Travelers Bldg., Richmond, Va.

SEPTEMBER 23-26.—COLORADO SPRINGS, COLO.
International City Managers' Association. (Broadmoor Hotel.) Exec. Dir., Clarence E. Ridley, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 23, WEEK OF.—FRANKFORT, KY.
Kentucky Municipal League. (New Capital Hotel.) Exec. Sec., Carl B. Wachs, Univ. of Kentucky, Lexington, Ky.

SEPTEMBER 24-27.—CLEVELAND, OHIO.
American Institute of Park Executives and the American Park Society. (Hotel Statler.) Exec. Sec., Will O. Doolittle, Box 422, Tulsa, Oklahoma.

SEPTEMBER 24-27.—NEW YORK CITY.
New England Water Works Association. (Hotel Commodore.) Sec., Frank J. Gifford, 613 Statler Bldg., Boston, Mass.

SEPTEMBER 30-OCTOBER 2.—DETROIT, MICH.
American Public Works Association. (Hotel Book-Cadillac.) Exec. Dir., Frank W. Herring, 1313 E. 60th St., Chicago, Ill.

SEPTEMBER 30-OCTOBER 4.—CLEVELAND, OHIO.
National Recreation Association. (Hotel Statler.) Sec., Howard S. Braucher, 315 Fourth Ave., New York.

OCTOBER 1-2.—COLUMBUS, OHIO.
Ohio Conference on Sewage Treatment. (Neil House.) Sec., B. M. McDill, Dept. of Health, Columbus, Ohio.

OCTOBER 2-4.—ROCK ISLAND, ILL.
Illinois Municipal League. (Fort Armstrong Hotel.) Exec. Dir., A. D. McLarty, 500 E. Capitol Ave., Springfield, Ill.

OCTOBER 3-5.—CHICAGO, ILL.
(Hotel Sherman.) First annual convention of the *Federation of Sewage Works Associations,* Sec.-Treas., H. E. Moses, 1522 N. Second St., Harrisburg, Pa., meeting in conjunction with the annual meeting of the *Central States Sewage Works Association,* Sec., W. H. Wisely, State Dept. of Public Health, Springfield, Ill.

OCTOBER 5-8.—CHICAGO, ILL.
Institute of Traffic Engineers. (Sherman Hotel.) Sec.-Treas., Harold F. Hammond, 60 John St., New York.

OCTOBER 7-11.—CHICAGO, ILL.
National Safety Council. (Stevens Hotel.) M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

OCTOBER 8-11.—DETROIT, MICH.
American Public Health Association. (Book-Cadillac Hotel.) Exec. Sec., Dr. Reginald M. Atwater, 50 W. 50th St., New York.

OCTOBER 8-10.—SCOTTSBLUFF, NEBR.
League of Nebraska Municipalities. (Hotel Lincoln.) Sec.-Treas., C. E. Beals, 204 Brownell Bldg., Lincoln, Nebr.

OCTOBER 8-9.—MADISON, WIS.
Wisconsin Chiefs of Police Association. (Hotel Loraine.) Sec., R. K. McCarty, Kaukauna, Wis.

*OCTOBER 9-11.—JACKSON, MICH.
Michigan Municipal League. (Hotel Hayes.) Dir., Herbert A. Olson, 205 South State St., Ann Arbor, Mich.

*OCTOBER 9-11.—MILWAUKEE, WIS.
League of Wisconsin Municipalities. Sec., Frederick McMillin, 30 E. Johnson St., Madison, Wis.

*OCTOBER 10-12.—CHARLOTTE, N. C.
North Carolina League of Municipalities. (Hotel Charlotte.) Exec. Sec., Patrick Healy, Jr., 704 Raleigh Bldg., Raleigh, N. C.

OCTOBER 14-17.—TULSA, OKLA.
American Water Works Association—Southwest Section. (Mayo Hotel.) Address: Sec., Lewis A. Quigley, Supt. Water Works, Fort Worth, Texas.

* First appearance of notice on this page.

OCTOBER 14-16.—MANITOWOC, WIS.
American Water Works Association—Wisconsin Section. (Hotel Manitowoc.) Sec., L. A. Smith, City Hall, Madison, Wis.

OCTOBER 14-17.—JACKSONVILLE, FLA.
International Municipal Signal Association, Inc. (George Washington Hotel.) Sec., Irvin Shulsinger, 8 E. 41st St., New York.

OCTOBER 14-18.—DETROIT, MICH.
National Association of Public School Business Officials. (Book-Cadillac Hotel.) Sec., H. W. Cramblet, Board of Education, Pittsburgh, Pa.

*OCTOBER 15-17—SPRINGFIELD, MASS.
New England Sewage Works Association. (Hotel Kimball.) Sec.-Treas., LeRoy W. Van Kleeck, State Office Bldg., Hartford, Conn.

OCTOBER 18-19.—ATLANTIC CITY, N. J.
American Water Works Association—New Jersey Section. (Madison Hotel.) Sec.-Treas., C. B. Tygert, Box 178, Newark, N. J.

*OCTOBER 20-23.—BOSTON, MASS.
National Association of Commercial Organization Secretaries. (Copley Plaza Hotel.) Asst. Sec.-Treas., Mrs. Norma McKellops, 1615 H St., N. W., Washington, D. C.

OCTOBER 21-23.—LEXINGTON, KY.
American Water Works Association—Kentucky-Tennessee Section. (Lafayette Hotel.) Sec.-Treas., Howard D. Schmidt, 420 6th Ave., N., Nashville, Tenn.

OCTOBER 21.—BLUEFIELD, W. VA.
League of West Virginia Municipalities. Exec. Sec., Hume K. Nowlan, Hinton, W. Va.

OCTOBER 23-26.—LOS ANGELES, CALIF.
American Water Works Association—California Section. (Biltmore Hotel.) Sec., Burton S. Grant, Box 240, Arcade Annex, Los Angeles, Calif.

*OCTOBER 24-26.—HUNTINGTON, W. VA.
American Water Works Association—West Virginia Section. Sec., John B. Harrington, State Dept. of Health, Charleston, W. Va.

OCTOBER 28-30.—RALEIGH, N. C.
Joint meeting. (Hotel Sir Walter.) *American Water Works Association—North Carolina Section,* Sec., R. S. Phillips, 206 Dacian Ave., Durham, N. C. *North Carolina Sewage Works Association,* Acting Sec., A. R. Hollette, Chapel Hill, N. C.

NOVEMBER 7-8.—WILMINGTON, DEL.
American Water Works Association—Four States Section. (Hotel Du Pont.) Sec.-Treas., Carl A. Hechmer, Washington Suburban Sanitary Dist., Hyattsville, Md.

NOVEMBER 7-8.—ST. PAUL, MINN.
American Water Works Association—Minnesota Section. (St. Paul Hotel.) Sec.-Treas., Ronald M. Finch, Wallace & Tiernan Co., Inc., 414 Flour Exchange, Minneapolis, Minn.

*NOVEMBER 7-8.—FORT WORTH, TEXAS.
League of Texas Municipalities. (Texas Hotel.) Exec. Sec., E. E. McAdams, 2223 Guadalupe St., Austin, Texas.

*NOVEMBER 13-15.—OMAHA, NEBR.
American Water Works Association—Missouri Valley Section. (Hotel Fontenelle.) Sec., Earle L. Waterman, Univ. of Iowa, Iowa City, Iowa.

*DECEMBER 2-5.—NEW YORK CITY.
American Society of Mechanical Engineers. (Hotel Astor.) Nat'l Sec., C. E. Davies, 29 W. 39th St., New York.

*DECEMBER 9, WEEK OF.—DALLAS, TEXAS.
The Asphalt Institute. M'ng Dir., J. E. Pennybacker, 801 Second Avenue, New York City.

The Sixth Annual Montana National Bituminous Conference has been postponed until the fall of 1941, according to D. A. McKinnon, State Highway Engineer, Helena, Mont.

STRATFORD COLLECTS

80% of Old Arrears

Five years ago the Town of Stratford, Conn., knew its taxpayers owed it a lot of money in back taxes, but there was no clear record of how much. The Finance Department tackled the job of finding out and setting up a unit tax ledger listing all arrears. They totaled $450,000 for this town of 24,000 population.

The taxpayers who were paying year after year were carrying this load. The Town decided to remove it as far as possible. First an Underwood Elliott Fisher accounting machine was installed to post arrears payments to both the unit ledger and a cash journal at one operation. Then the delinquents were billed, and the accounting machine posted receipts promptly, readably and accurately.

Within five years, this huge backlog of $450,000 had been reduced to $90,000.

YOUR TAX ARREARS CAN BE REDUCED, TOO!

It takes a little ready-made system which we can quickly tell you about.

It's a system that brings in money as good as new revenues, that turns old debts into cash. There is no magic. You must know who owes you how much. The rest is machine work. We have worked out machines not only to do this job in addition to your regular job of current tax accounting and billing, but we have designed them to fit the volume of your work and the corresponding size of your pocketbook.

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UNDERWOOD ELLIOTT FISHER CO.
One Park Avenue, New York City

Send me without obligation a free copy of SMASH, your primer of modern tax accounting and billing.

NAME .....

TITLE .....

CITY ..... STATE .....

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Photograph Taken at the Instant the Westinghouse Sterilamp Killed Active Paramecia in One Hundred-Thousandth of a Second.—A Demonstration at the New York World's Fair

Instant Sterilization Demonstrated at the New York World's Fair

One of the most striking demonstrations at the New York World's Fair of 1940 is the Micro Death Ray at the Westinghouse Electric & Mfg. Co. Building. We have mentioned in these columns from time to time the effective work of the Sterilamp, a high-efficiency tube for the production of ultra-violet rays, which was developed by Dr. H. C. Rentschler, at the Westinghouse Lamp Division research laboratories, in Bloomfield, N. J. This lamp is now used in operating-rooms to insure sterile air, is used for speeding the aging of beef to tenderize it, and over the racks containing drinking glasses and silverware in restaurants.

Desiring to determine the effectiveness of an exceedingly high-intensity discharge from the lamp, Dr. Rentschler and Milton Hoyt, of the Westinghouse Lamp Division research laboratories, connected the source of current to a bent Sterilamp through a spark gap having spherical electrodes. The bent Sterilamp encircles a miniature pool of paramecia, active organisms found in decaying straw. Paramecia are used instead of bacteria because the latter are too small to be seen readily, even when projected upon a very large screen.

At the demonstration at the World's Fair, an image of a pool of active paramecia is thrown on the screen and then when the discharge of direct current across the spark gap occurs, giving a flash of ultra-violet light from the Sterilamp, the paramecia on the screen are seen to stop moving instantly as the result of the high intensity of the death rays.

Covered Sludge Beds Along Hudson River

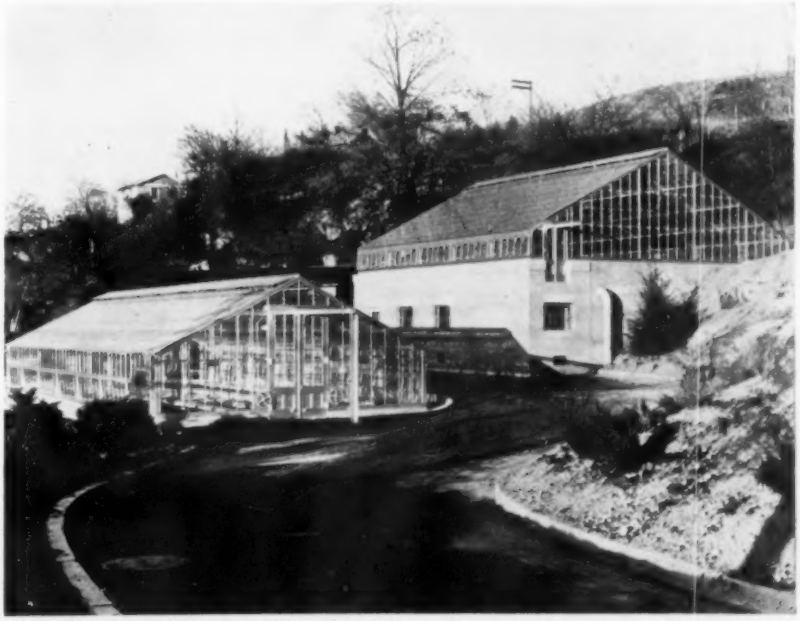
Efforts made by the New York State Health Department during the past few years have borne fruit in the construction of sewage-treatment plants by 27 municipalities along the Hudson River, with PWA and WPA grants. Of these, 20 have selected air drying of sludge in glass-enclosed beds, while only 7 have adopted other methods.

As an example, the village of Ossining, N. Y., has constructed two sewage-treatment plants, two being necessary because it was impractical to bring the sewage to one point for treatment in a single plant, according to James C. Harding, consulting engineer. The smaller of the two plants is designed to handle a flow of 0.5 mgd and includes grit chambers, glass-covered Imhoff tanks, glass-enclosed sludge beds, and chlorination. The glass cover over the Imhoff tanks is designed to lessen the possibility of odor nuisance and to make the plant more sightly because of its location.

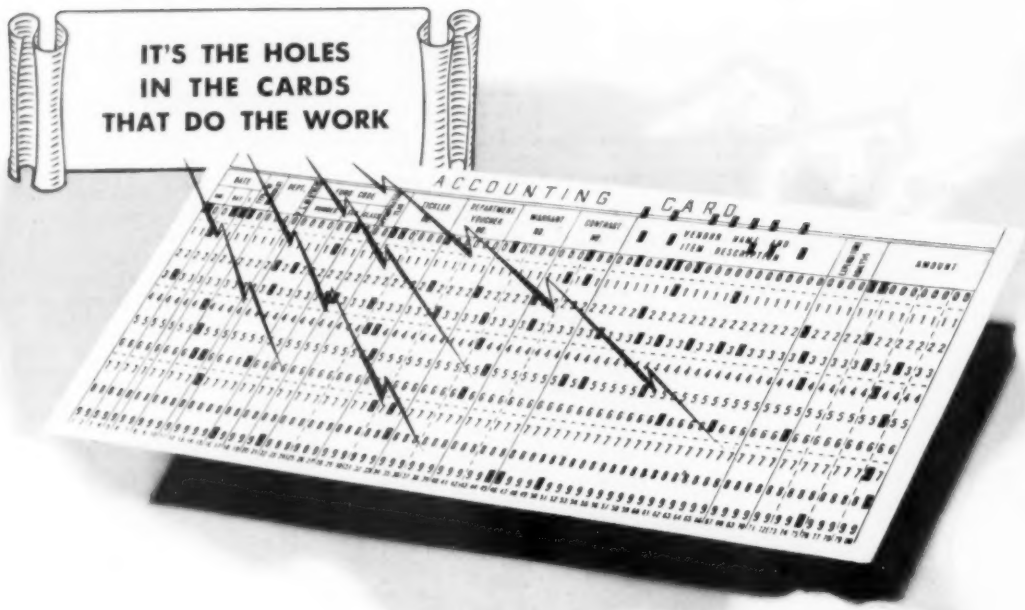
The larger plant at Ossining is designed for a flow of 2 mgd and consists of grit chambers, comminutor, rectangular clarifiers, digesters with floating covers, and glass-enclosed sludge beds. Lord & Burnham glass enclosures are used on most of the plants referred to above, and entirely at the two Ossining plants. Complete information, with construction details of standard sludge beds, may be secured direct from Lord and Burnham, Irvington, N. Y.

Water-Main Cleaners Open Chicago Office

Clinton Inglee, President and General Manager, National Water Main Cleaning Co., 30 Church Street, New York, has announced the opening of a new branch office at 205 West Wacker Drive, Chicago, Ill., with James R. Brown as Branch Manager. Mr. Brown will have general charge of the sales of National Water Main Cleaning Co. services in Kentucky, Ohio, Illinois, Indiana and Michigan.



The Glass-Covered Sludge Bed and Clarifier of the Smaller of the Two Sewage-Treatment Plants at Ossining, N. Y.



A method which covers important governmental accounting requirements

For more than fifty years, the punched card method of accounting has been bringing accuracy and high speed to the obtaining of important governmental accounting and statistical reports. This method enables Federal, State, County and Municipal Departments to render prompt, efficient and economical service to the country in general, and to the American taxpayer in particular.

Investigate the many advantages which this method now offers your department. Your nearest International Business Machines representative stands ready to give you full cooperation. Call him today. There is no obligation.

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. . . two unusual exhibits, in the International Business Machines Corporation's Galleries of Science and Art, at the World's Fair of 1940 in New York and the Golden Gate International Exposition

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590 MADISON AVENUE, NEW YORK, N. Y.

Branch Offices
IN PRINCIPAL CITIES OF THE WORLD

When you write for that catalog, kindly mention THE AMERICAN CITY.

Sewage Works Convention in Chicago, October 3-5

The First Annual Convention of the Federation of Sewage Works Associations is to be held at the Sherman Hotel, Chicago, Ill., October 3, 4 and 5 in conjunction with the Annual Meeting of the Central States Sewage Works Association. The total membership of the 25 local associations affiliated with the Federation is 2,750, and an attendance of 600 is expected at this convention.

No final action can be taken on the proposals of the Committee for Expansion and Reorganization prior to the meeting in Chicago. It is planned, however, to strengthen, and not to change; the set-up of the Federation in order to improve the professional position of all workers in the broad field of sewage treatment, particularly sewage-plant operators.

In its new and revitalized form it is proposed to make no change whatsoever in the basic Federation set-up as it has existed for the past 12 years. It is to continue as a Federation, not of individual members, but of local affiliated associations, with no interference from headquarters, direct or indirect, with the activities of the local member associations, which are to retain, just as they always have, complete freedom of action with respect to local affairs. These aims are to be realized by establishing a strong, central executive office with a full-time Executive Secretary and a stenographer to take over all routine business; to procure advertising for the *Journal;* to maintain closer contact with the member associations, and thus to put the business end of the Federation on a par with that of other national professional associations.

Gerlach Made a Member of Advertising Firm

A. J. Gerlach, who has been associated with B. J. Paulson as an account executive of B. J. Paulson Associates, has been taken into the firm as a stockholder and executive officer. He has been made Vice-President and Treasurer, while B. J. Paulson continues as President and General Manager. E. A. Schueppert, who retired from active business as a printer several months ago, is the third stockholder, and Secretary of the company, which has the new name of Paulson-Gerlach & Associates, Inc., and is located at 623 North Second Street, Milwaukee, Wis.

Radial Bowl Reflector

A new radial bowl reflector has been developed by Line Material Co., Milwaukee, Wis., for use in the growing number of instances where it is desirable to have radial bowl reflectors that are interchangeable with a concealed light source type of luminaire for street lighting. This new design makes the change-over from the radial bowl reflector to the Spherolite Luminaire, or vice versa, a simple operation involving no changes in socket

The New L-M Radial Bowl Reflector

adjustments or wiring. No adapters or other special parts are needed to attach the reflector directly to the standard Spherolite hood. This is possible because the L-M radial bowl reflector is fitted with two latches which fasten directly to the Spherolite hood as shown in the accompanying illustration. The reflectors are 20 inches in diameter and are available in both Alzak aluminum and vitreous enamel.

Marmon-Herrington Has World's Fair Exhibit

An all-wheel-drive Ford truck equipped by Marmon-Herrington Co., Inc., Indianapolis, Ind., is included in the National Highway Transportation exhibit at the 1940 World's Fair at New York. The power and traction on all four, and in some cases all six, wheels make these Marmon-Herrington Fords able to climb incredibly steep hills, or travel icy or snow-covered roads with minimum danger of skidding, side slip or jackknifing. Savings on tire wear and fuel consumption are also reported as important.

Among the latest Ford units to be converted to all-wheel-drive by Marmon-Herrington is the new 101-inch wheel base cab-over-engine model, which by reason of its short coupling and all-wheel-drive traction is especially adaptable to semi-trailer work and excavation and gives excellent performance in deep sand, dirt, mud and snow.

Pipe Enamels for Water and Sewer Lines

A complete line of primers and pipe enamels made of processed non-asphaltic, pyro-bituminous substances has been developed by the Steel Protection & Chemical Co., Inc., Mooresville, Ind. In the water-works field, these enamels are designed particularly for coating and lining steel water lines and penstocks, and for lining cast iron pipes. They are also used for steel water tank, concrete reservoir or filter basin linings, and for the protection of steel filter basins, filter troughs and wash-water troughs. In the sewerage field, they are used for lining steel sewer lines and storm sewers, concrete sewers, concrete or vitrified sewer-line joints, and cast iron sewer lines, and for protecting the metal baffles in basins.

The Plastex primer and enamels are readily applied in the field or shops by any of the standard methods, such as centrifugal spinning, hand sling or hand daubing methods after the surface has been cleaned thoroughly. The surface to be coated with the Plastex primer and enamel must be completely dry when the application is made, and the temperature must be above 35° F.

The enamel is applied at temperatures within 10° F. of 480° F. for the inside of the pipe and for outside application within 10° F. of 460° F. when the application is made by centrifugal spinning. For hand methods, the temperatures range between 425 and 475° F. The surface to be coated should be heated, but never more than 25°F. more than the temperature of the enamel being applied. The enamel is applied not less than 24 hours nor more than 200 hours after the prime coat.

At the exhibit of the Steel Protection & Chemical Co., Inc., Mooresville, Ind., manufacturers of processed Plastex protective coatings, at the American Water Works Association convention, in Kansas City, April, 1940, a very interesting demonstration of the ability of Plastex water-works enamel to withstand extremes of temperature was demonstrated. Two steel plates were coated with identical enamel, and one maintained at minus 20 °F. by means of dry ice, and the other at 180° F. by means of an electric heater throughout the convention. As neither showed any damage from these temperatures, the extremes were increased to minum 38° F and to 200° F. toward the end of the session. Even at these temperatures, the cold sample showed no cracks, chips or breakage from the plate, and the heated sample showed no sagging of the enamel. More complete information regarding Plastex protective coatings and these tests may be secured direct from the manufacturer.

Magee Reassumes Presidency

Carl C. Magee, inventor of the parking meter and founder of The Dual Parking Meter Co., Oklahoma City, Okla., has reassumed the presidency of this firm. Richard J. Benzel, who assumed the presidency following the death of a member of Mr. Magee's family, has retired from the company.

Roller-Bearing Hogs for Garbage Grinding

Roller-bearing hogs are built by Diamond Iron Works, Inc., Minneapolis, Minn., in eight sizes ranging from 4 to 35 or 40 tons capacity per hour for grinding garbage for disposal in trunk-line sewers. These hogs are designed with rugged knives for shear cutting of products from coarse to 0.014-inch thickness. Material passes through the hog but once. The stationary knives are made of tool steel ¾-inch thick, and the rotor knives are of 1½-inch thick tool steel. The knives are ground at a slight angle to shear cut, giving maximum strength to the cutting edges and they are adjustable for cutting settings and for wear.

No feed operator is required for the Diamond Hog, as any wet or dry garbage, masses or chunks that will pass into the overhead feed opening are fed by their own weight.

Our Standards—
YOUR REQUIREMENTS

THE ideal delivery equipment for you is the equipment that comes nearest your exact requirements. We know that. We build trucks for you, not for ourselves.

But we reserve the privilege of satisfying our own standards with respect to quality. Quality, in a Ford unit, means many things. Long-lasting, special alloy steels. Advanced engineering for better performance, tighter control of running costs. Good body design, with emphasis on smart appearance and an eye toward ease of working the load. Sound body construction for load protection.

Try a Ford on your job. Ask your dealer about a free "on-the-job" test with your own driver at the wheel. He'll have some good things to say about easy handling, quietness and comfort. And *you'll* be pleased when you see how little a Ford costs to own and operate.

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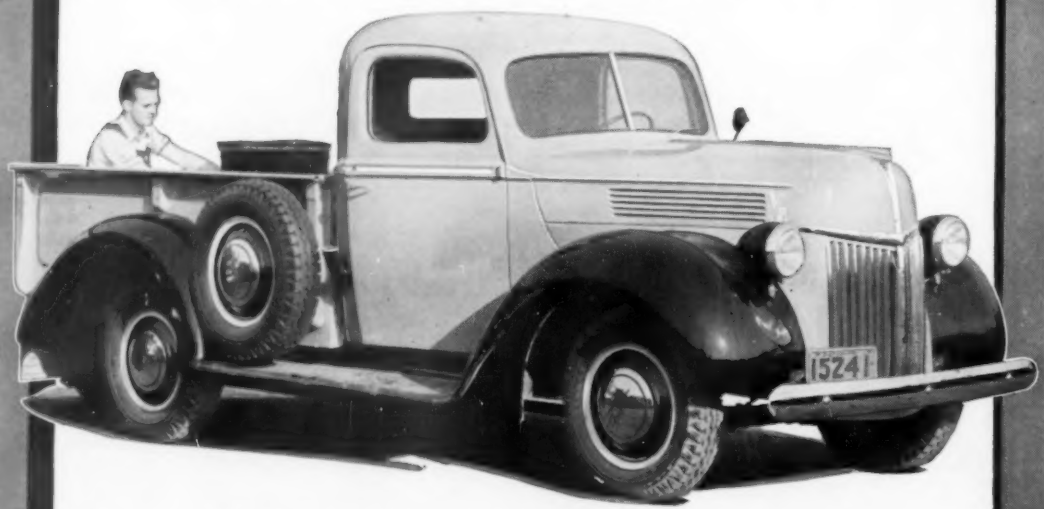
VISIT THE NEW FORD EXPOSITIONS AT THE TWO FAIRS, NEW YORK AND SAN FRANCISCO, 1940



FORD TRUCKS
AND COMMERCIAL CARS

FORD MOTOR COMPANY, BUILDERS OF FORD V-8 AND MERCURY CARS, FORD TRUCKS, COMMERCIAL CARS, STATION WAGONS AND TRANSIT BUSES.

Two 15,000-gpm Turbine Pumps at the Peerless Pump Factory Ready for Shipment to Panama. The Man Holds a 4-Inch Pump

Turbine Pumps Installed at Panama Canal

Fabricated for use in various locations in the Panama Canal Zone, the two largest capacity turbine pumps ever built are now in course of installation. They weigh 60,000 pounds each, exclusive of the 250-hp motors, and each will deliver 15,000 gallons of water per minute. They will be moved from place to place for pumping out caissons, sumps and concrete basins and for emergency service.

These pumps will be called upon to handle salt water, necessitating the use of corrosion-resistant discharge lines, fabricated of USS Cor-tan steel. Stainless steel shafting is used. The impellers are made of a special bronze, with vanes incorporating new hydro-dynamic flow lines to increase the efficiency.

An extra-heavy strainer of grid design is provided to withstand the entire weight of the pump and motor. These pumps are manufactured for the U. S. Government by the Peerless Pump Division of Food Machinery Corporation, Los Angeles, Calif.

To supplement the use of these world's largest turbines, additional turbine units have been ordered for emergencies.

Tolman Joins Jeffrey

Samuel L. Tolman

Samuel L. Tolman, who was previously associated with the Jeffrey Mfg. Co., Columbus, Ohio, and served as Superintendent of the Ward's Island sewage - treatment plant, New York City, from September, 1938, to May, 1940, has rejoined Jeffrey as Manager of Sales.

Paint Consultants and Manufacturers

Robert E. Mitchell, formerly associated with the Joseph Dixon Crucible Co. as Manager of Paint Sales, is now President of the newly organized Paint Engineers, Inc., manufacturers of paints and varnishes, and consultants on the use of paints.

For eight years prior to his association with Dixon, Mr. Mitchell was with Valentine & Co., first as Field Sales Manager; and later as Advertising and Sales Promotion Manager.

Paint Engineers, Inc., is located at Hawthorne, N. J.

Falk, Board Chairman of Allis-Chalmers, Dies

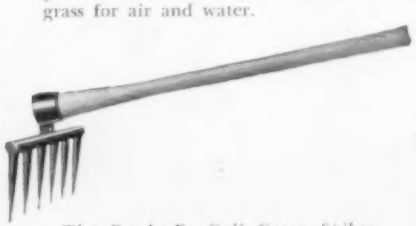
General Otto H. Falk, Chairman of the Board of Allis-Chalmers Mfg. Co., Milwaukee, Wis., passed away May 21, 1940, closing a career notable for its leadership in industry and in Wisconsin National Guard affairs.

Otto H. Falk, Late Board Chairman of Allis-Chalmers Mfg. Co.

The first 30 years of his life General Falk devoted largely to military activities, rising rapidly in the National Guard. Then he turned to industry, becoming President and later Chairman of the Board of Allis-Chalmers Manufacturing Co., a Director of the state's leading bank, The First Wisconsin National, and an officer and director in many corporations.

Diamond Taper Spikers for City Golf Greens

A new spiker which is light in construction, making it possible to use it with a pick action instead of the straight down push, thus eliminating the possibility of injuring the operator's foot, has been developed by the Ess-An-Ee Mfg. Co., 621 East Cameron Street, Tulsa, Okla., for spiking golf greens. The diamond-shaped tapered spikes have four cutting edges which force the soil away from the spikes instead of binding. This new spiker is easy to release and does not tear up the surface. After removal it provides ventilation to the roots of the grass for air and water.



The Ess-An-Ee Golf Green Spiker

RUSTA-RESTOR TRADE MARK REGISTERED
PATS. PEND.
Stops rust in steel water tanks and filter beds
(CATHODIC PROTECTION)
Write for circular
RUSTA RESTOR CORP.
1450 W. State Street
FREMONT OHIO

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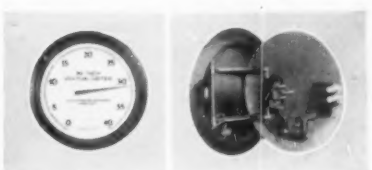
IMPROVED METERING AND CONTROLLING EQUIPMENT



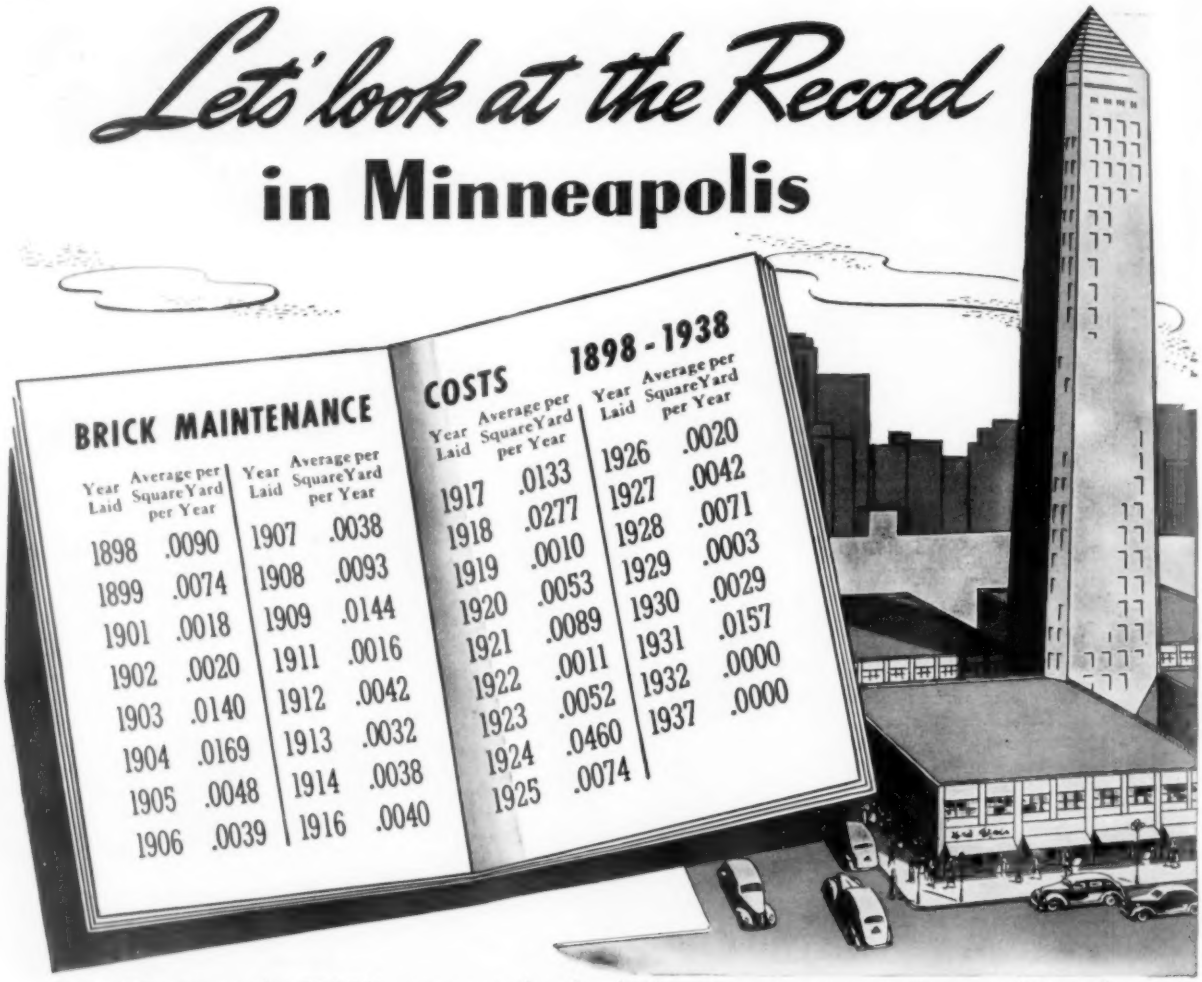
CHRONOFLO LARGE DIAL ILLUMINATED INDICATOR

provides a useful and ornamental addition to the operating gallery. Mounting the entire mechanism on sturdy concealed double hinges allows the operator to make all adjustments without removal of dial or any working parts.

Write for Bulletin 320

BUILDERS - PROVIDENCE
IRON FOUNDRY RHODE ISLAND

Let's look at the Record in Minneapolis



Year Laid	Average per Square Yard per Year	Year Laid	Average per Square Yard per Year
1898	.0090	1907	.0038
1899	.0074	1908	.0093
1901	.0018	1909	.0144
1902	.0020	1911	.0016
1903	.0140	1912	.0042
1904	.0169	1913	.0032
1905	.0048	1914	.0038
1906	.0039	1916	.0040

Year Laid	Average per Square Yard per Year	Year Laid	Average per Square Yard per Year
1917	.0133	1926	.0020
1918	.0277	1927	.0042
1919	.0010	1928	.0071
1920	.0053	1929	.0003
1921	.0089	1930	.0029
1922	.0011	1931	.0157
1923	.0052	1932	.0000
1924	.0460	1937	.0000
1925	.0074		

YOU'D expect the 784,761 square yards of brick to have a lower maintenance cost than any other type of pavement in Minneapolis. And it has—see official figures for the past 40 years.

And the Minneapolis weather is a pavement-killer! Temperatures from 100° above to plenty of—20°—30°. Months of chain traffic in ice-rutted streets... Over 40" of snow to be removed each winter—quantities of salt and cinders are used.

Yet under these severe service conditions the brick on its busiest streets are in excellent condition after 40 years of hard service.

A brick surface has greater immunity to weather damage than any other commonly used paving material. It is denser – less absorbent. Freeze and thaw affect it less. And as for traffic wear, nothing on wheels can damage it.

South Nicollet Street, laid in 1898. In excellent condition after 42 years' continuous service.

For further information write National Paving Brick Association, National Press Building, Washington, D. C.

BRICK

FOR NEW CONSTRUCTION OR RESURFACE WORK

During July we hope you will remember to mention THE AMERICAN CITY.

Trailer Flushers for Streets in Small Cities

A tractor flusher, which is a 2-wheel trailer frame mounting a 1,000-gallon elliptical tank with transverse surge plates, and which can be pulled and powered by any 14-hp industrial rubber-tired tractor, is being manufactured by Standard Steel Works, North Kansas City, Mo., for cities of all sizes, but its economy appeals particularly to the smaller population groups. The flusher can be detached and the tractor is then available for hauling, mowing, snow-plowing and other work. A fire hose converts the unit into auxiliary fire-fighting equipment and a spray hose converts it into an outfit to spray trees and weeds.

The pump is a special Viking flusher pump with 2½-inch suction and discharge with an output of 127 gallons per minute, driven by a telescopic driveshaft with universal joints off the power take-off of the tractor. The piping is so arranged that the contents of the tank may be delivered through the flushing nozzles individually or both at the same time, or through the sprinkler nozzles individually or both at the same time, or it can pump from an outside source to another outside source, or can pump from the tank through a hose for fire fighting, or also from the tank through a hose for tree spraying or weed spraying.

The manufacturer reports that pumping 100 gpm the unit will travel approximately 1,800 feet in first gear, 2,900 feet in second gear, 5,400 feet in third gear, and 8,600 feet in fourth gear. Similarly, for sprinkling, the unit will travel 2,500 feet in first gear, 3,800 in second gear, 7,300 feet in third gear, and 11,600 feet in fourth gear. Standard equipment on the unit is 15 feet of 3-inch loading hose, four light reflectors, a gooseneck and removable mesh strainer, a tell-tale gage, two flusher nozzles, a removable strainer in the suction lines of the pump, and two sprinkler heads. As auxiliary equipment, there are 2-inch fire hose in 25-foot lengths with nozzle, 50-foot lengths of tree-spraying hose, and 15-foot lengths of 3-inch suction hose.

Death of Max F. Wirtz, President of Atlas Co.

Max F. Wirtz, founder and President of the Atlas Mineral Products Co., Mertztown, Pa., died on May 7, 1940, at his home in Allentown, Pa., after a long illness. He was in his seventy-first year and recently returned from a business trip to San Francisco and later underwent treatment at a Philadelphia hospital.

Mr. Wirtz founded the Atlas Company in 1892 and maintained an active interest in it until his death. He is survived by his wife, the former Bernardine Brady, and five children by his first wife.

Jere K. Ross Dies, Headed Contract Dept.

Jere K. Ross of the Wailes Dove-Hermiston Corp., Westfield, N. J., died on May 15 at Scotch Plains, N. J. He joined the Wailes Dove-Hermiston Corp. as chemist in the production laboratory in 1928 after having graduated from Lafayette College in 1922. He later became field chemist, then Superintendent of Field Operation and shortly before his fatal illness was advanced to Manager of the Contract Department.

The Standard Tractor Trailer Flusher

SYNTRON
"GRAVIMETRIC"
FEEDER MACHINES
for Accurate
Dependable
Dry Chemical Dosage
by Weight

SYNTRON
"VOLUMETRIC"
FEEDER MACHINES
for Automatic
Dry Chemical Dosage
from Flow Meter or
pH Indicator Control
SYNTRON COMPANY
430 LEXINGTON AVE., HOMER CITY, PA.

The Major Development in low-cost pumping for deep wells

Operating at one-half the usual pump shaft speed, the amazing Peerless Hi-Lift Pump lifts water without slippage. A unique spiral-shaped hard chrome rotor revolves within a resilient stator bearing. The hypocycloidal action literally "squeezes" the water upward. Water-lubricated. Chromium armored shaft bearings. 300 to 5000 gallons per hour. Licensed under R. Moineau Patents Nos. 2028407 and 1892217. Request Bulletin.

PEERLESS PUMP DIVISION
Food Machinery Corp.
Factories: Los Angeles, San Jose, Fresno, Calif. Massillon, Ohio

PEERLESS HI-LIFT

(1) 2500 gallon Heil Streamline Flusher Unit
(2) 800 gallon Heil Standard Street Flusher

Do a Better Cleaning Job with HEIL STREET FLUSHERS!

The Heil Co., world famous producers of Transportation Tanks and Hydraulic Dump Units, announce a new and improved series of street flusher units. These efficient, engine-powered flushers are equipped with specially designed clog-proof nozzles which throw a steady sheet of water to either side under pressure . . . They are made in standard or streamline models and in all sizes and capacities . . . Heil Street Flushers also can be furnished with special equipment for fire-fighting service beyond the water mains . . . A free copy of Heil Street Flusher Bulletin No. TT-639 is yours for the asking . . . Address:

THE HEIL CO.
MILWAUKEE, WISCONSIN • HILLSIDE, NEW JERSEY

HEIL QUALITY EQUIPMENT FOR MUNICIPAL SERVICE

Above: Heil Streamline Water Tank.
Below: Heil Covered Garbage Body.

Above: Heil Conveyor Sanitation Unit.
Below: Heil "SL" Dump Unit.

Of Steelcrete Expanded Metal, the "Detroit Special" Basket needs no reinforcing rods. A quarter-inch thick bumping ring welded inside takes the rap. The open mesh apron permits quick drying. The solid pan bottom has drain holes.

Write today for specifications and prices!

"IT'S WHEELING STEEL"

THE CONSOLIDATED EXPANDED METAL COMPANIES
WHEELING, WEST VIRGINIA
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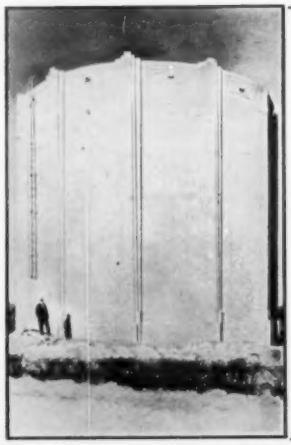


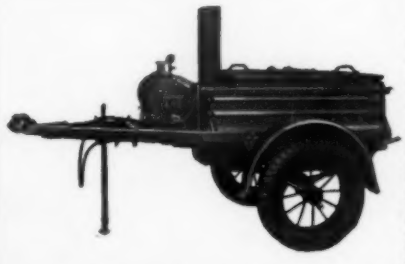
THE WILLIAM S. HEWETT SYSTEM

of reinforced concrete construction

results in structures that WILL NOT CRACK, are frost resisting and require no upkeep. This system of reinforcing is applied to circular tanks for the storage of liquids and to thin shell domes. In use more than 18 years; applied to tanks everywhere, with a total capacity of more than 60,000,000 gals. and to domes covering more than 400,000 sq. ft. of surface. We do not build but cooperate with local engineers in the design of structures.

Write for literature. Estimates furnished without obligation.

The William S. Hewett System
20 N. Wacker Drive, Chicago, Ill.



CONNERY'S

Style "S" 4 Pass Oil-Burning Tar & Asphalt Heating Kettle is the ideal heater for highway maintenance. Fuel costs reduced 50% and hot material furnished twice as fast. Equipped with 6.00 x 20—6-ply, pneumatic - tired wheels with Timken bearings, truck springs and patented hitch for fast and safe towing.

Send today for our complete catalog showing our full line of Tar and Asphalt Heating Kettles, Spraying Attachments, Pouring Pots, etc.

CONNERY CONSTRUCTION COMPANY
4000 North Second St. Philadelphia, Pa.

A Hydrauger Installed Ready to Place a Small Service Pipe Beneath a Paved Street

Boring Tool Eliminates Service Pipe Trenching

To eliminate the need for digging trenches across pavements, highways and streets for the installation of service pipes, the Hydrauger Corporation, 116B New Montgomery Street, San Francisco, Calif., manufactures boring tools which will drill horizontally for distances up to 120 feet or more, producing holes from 2½ to 14½ inches in diameter. It is claimed that this mechanical device will bore through sand, clay, conglomerate, rock and shale at reasonable speeds.

In cases where pavement cutting permits cannot be obtained, this method satisfactorily solves the problem of installing mains, service leads, conduits, cables, culverts and drain pipes. On account of the design of this tool, the drilling accuracy is said to run 99 per cent because its course is controlled by sights. It is operated by an air motor and uses a stream of water passing through the hollow boring bar to sluice out the cuttings and to lubricate the bit.

A new complete fully illustrated bulletin describing this equipment may be secured direct from the manufacturer.

Useful Attachments for Motor Graders

The motor grader has become one of the most useful tools of the highway and street maintenance engineer. In order to increase still further the service of this powerful tool, numerous attachments have been developed. Caterpillar Tractor Co., Peoria, Ill., in Form 6087, describes a new group available for various models of Caterpillar motor graders.

These attachments include a shoulder finisher which fits flush on the end of the standard blade, giving a 6-foot blade extension with a 3½-foot adjustable wing. A front-mounted pusher blade, 10 feet long and 30½ inches high, is operated by the same frame and lifting mechanism used on the V-type snowplow with which the grader may be equipped. A snow-wing is another attachment.

These graders are also being equipped with all-steel cabs and double steel doors, and with an automotive type hot-water heater and a full equipment of electric lights. Scarifiers with removable-point teeth, an odometer to give an accurate record of the miles traveled, standard blade extensions for regular maintenance work, multiple blade atttachments comprising a series of nine short parallel blades, and a tire pump attached to the engine, complete the attachments which add to the service of motor graders as described in the folder mentioned above.

Julian d'Este Co. Merges with American Chain

The Julian d'Este Co., of Boston, Mass., established in 1870, has been merged with the American Chain and Cable Co., Inc., Bridgeport, Conn. The Julian d'Este Co. products, including Curtis steam specialties, pressure-reducing valves, liquid temperature regulators, tank and float valves, hot-water tank regulators, pump regulators and relief valves, will continue to be manufactured at the American Chain and Cable Co. plant at Reading, Pa., to which all inquiries should be addressed.

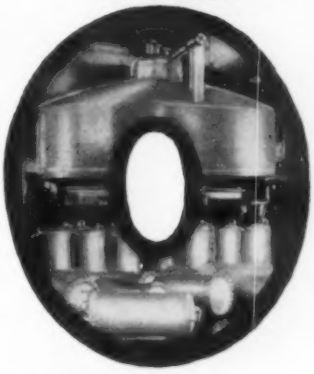
A Census of City Water-Softening Plants

The Ohio Salt Co., Wadsworth, Ohio, is compiling a census of water-softening plants in the United States covering both the zeolite type and the lime and soda type. A set of about twenty questions has been sent to all plants of these types in the United States to gather information which will be the basis of a special paper to be presented later before the American Water Works Association. Operators of water-softening plants and officials in those cities are urged to cooperate to make this presentation as complete as possible from all sections of the country.

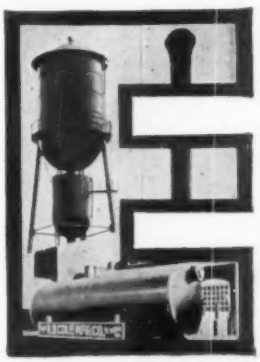
Wheeler of Ludlow Dies at Hospital

Fred L. Wheeler, who was Vice-President of the Ludlow Valve Mfg. Co., Troy, N. Y., and also Vice-President of the Canadian Branch, died June 19, in the Samaritan Hospital, Troy, N. Y., after an operation. Mr. Wheeler was born in Troy, and was active in the development of the Ludlow organization after graduating from Rensselaer Polytechnic Institute in 1894.

Tank Builders For Over 80 Years!



Tanks, Towers, Kettles, Kiers, Vats, Vessels, Bins, Boilers, Stacks, Standpipes and other fabricated plate-work from your specifications or ours.



Write for "Tank Talk" — 6-A, or let us figure on your requirements.

R.D.COLE MFG.CO.

Established in 1854

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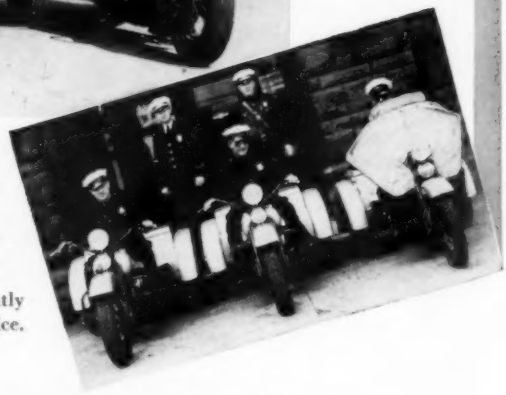
MORE CITIES PROVE *Servi-Car's*

ALL-AROUND UTILITY!



Servi-Car Squad
Flint, Michigan.

(*Right*) Peoria, Ill.
Servi-Car Patrol.

(*Left*) Servi-Cars recently delivered to Denver Police.

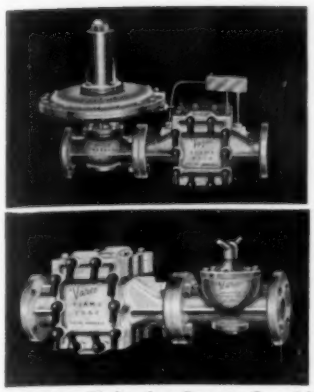
FLINT, DENVER AND PEORIA USE SERVI-CARS TO GREAT ADVANTAGE

THE Harley-Davidson Servi-Car is unequaled for handling a wide range of police work with speed and economy. Flint's story is a typical example — two officers on Servi-Cars patrol 700 parking meters — also police an additional area restricted to 2-hour parking. These two men now do the work which formerly required eight men on foot. A third Servi-Car is specially equipped for complete meter maintenance work, with space for meter heads, repair parts, tools, etc.

But Servi-Cars' great utility does not end with traffic work—they are also ideal for night patrol work, testing doors, checking property, escorting parades, rushing extra officers to scenes of trouble, mounting loud speakers to broadcast safety messages, and many other day and night police jobs. Phone your Harley-Davidson dealer to bring you full particulars. Write for large list of cities using Servi-Cars.

HARLEY-DAVIDSON MOTOR CO.
MILWAUKEE WISCONSIN

HARLEY-DAVIDSON
THE POLICE MOTORCYCLE



New Safety Units for Sewage-Gas Lines: Above, a Diaphragm-Operated Pressure Regulator and Flame Trap, and, below, a Flame Trap and Thermal Shut-off Valve for Lines Serving Gas Utilization Equipment

Two New Safety Units for Sludge-Gas Lines

The Vapor Recovery Systems Co., 2820 North Alameda Street, Compton, Calif., has announced two new safety units for service in sewage-sludge gas lines at sewage-treatment plants. The first consists of a sensitive diaphragm-operated pressure relief regulator and flame trap which is fully self-contained and includes a positive thermal shut-off valve. The second is a flame trap and thermal shut-off valve for gas lines serving gas utilization equipment.

Both of these units are manufactured of aluminum, which is claimed to be non-corrosive in sewage gas. The patentable feature of the units is the extensible flame-trap element designed to simplify inspection and maintenance. Both units are designed for straight-line flow to simplify piping connections.

A new Varec Sewage Gas Control and Safety Devices Catalog has been announced and will be sent to anyone mentioning this item and addressing The Vapor Recovery Systems Co., Box 628, Compton, Calif.

Reflector Strips for Airport Runways

At the request and expense of the Civil Aeronautics Authority, special reflecting runway markings have been laid on the airport at Indianapolis, Ind., in accordance with approved standard methods. Some 30,000 feet of 6-inch line of Prismo runway markings was laid in an installation inspected recently by over 200 airport officials at a special meeting. The economy of the installation was stressed, as the cost of materials to the airport is a minimum. The Prismo applications can be made on existing surfaces, no excavations are necessary, no power lines are required, and there is no delay to air traffic during the application of the lines.

Once the stripes are installed, there is practically no maintenance, and the reflecting value remains constant throughout the life of the stripes. Prismo runway applications made over 2½ years ago are still in service and effective. Emergency landings can be accomplished with safety on runways equipped with this type of markings, as the landing lights of the plane are sufficient to light up the markers and guide the planes safely.

At Indianapolis three 6-inch lines 6 inches apart are placed on each side of each runway for boundary markings. Then, 1,000 feet from each end of each runway, a group of 15 lines 6 inches wide by 100 feet long was placed to give the pilot his position in take-off and landing with relation to the ends of the runway. On runways 150 feet in width, two or three luminous yellow stripes are placed down the center.

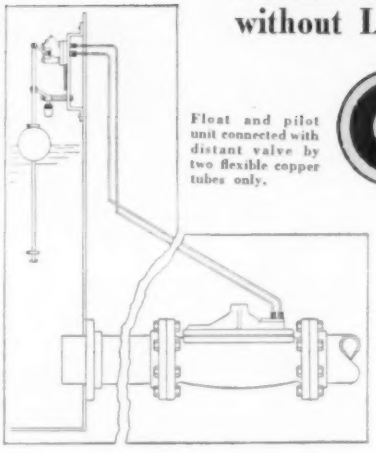
The markers on the Indianapolis airport were placed under the direction of Charles S. Dion, of Washington, former New York State Director of Aviation, who is now national aviation representative at the Prismo Safety Corporation, Huntingdon, Pa., originators of this marking system. The stripes were placed by machine. Although this type of luminous marker has been used for several years for highway signs and pavement center stripes, its use on airport runways is comparatively new. It has been installed at the U. S. Coast Guard station at Elizabeth, City, N. C., the Anacosta Naval Air Station, Washington, D. C., and the Cleveland municipal airport, among others.

No Other Valve Will DO THIS JOB!

Distant Remote Control Operation without Linkage *only with the*

CLAYTON *Feather-Touch Control*

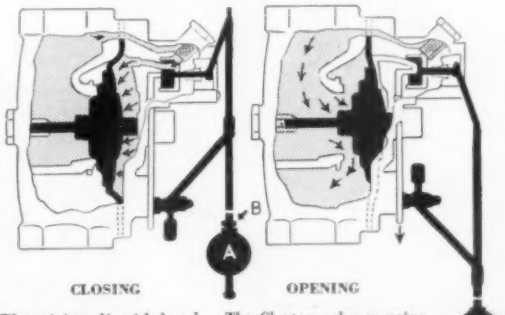
FLOAT VALVE



Float and pilot unit connected with distant valve by two flexible copper tubes only.

Where operations require remote control of water flow to maintain proper tank or reservoir levels, the Clayton Feather-Touch Control Float Valve is unexcelled. Absence of direct mechanical linkage eliminates faulty or delayed operation due to friction on line, avoids leakage and reduces upkeep. Float and pilot unit may be located at almost any distance from valve being operated (see sketch) as operating force is transmitted through two flexible copper tubes.

How The* CLAYTON VALVE *Operates



CLOSING

The rising liquid level causes the float ball (A) to contact the closing stop (B), rotating pilot to admit full line pressure to hydraulic chamber. The line pressure thus exerted against the full area of the diaphragm and disc assembly in the hydraulic chamber overcomes the pressure at the smaller area of the valve seat, causing a positive seating and a drip-tight closed valve.

OPENING

The Clayton valve remains closed until the liquid level drops to the opening or bottom "stop" (C) on the guide rod. As the float ball contacts this stop, the pilot valve disc is rotated to seal off the line pressure entering the hydraulic chamber and open a free passage from the hydraulic chamber to atmosphere. Thus the line pressure forces the diaphragm and disc assembly off the seat to a wide-open position.

The new and revolutionary operating principle of the Clayton Feather-Touch Control Float Valve makes it adaptable to many uses never before practicable with float valves of conventional design. This hydraulically operated valve opens wide or closes drip-tight shut under a two-ounce "touch" on the pilot arm. Speed of operation adjustable. No lingering in a partially open or closed position. No vibration, water hammer or line shock. Made in sizes from ½" to 12" for all pressures. Mail coupon for catalog and prices.

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CLAYTON MFG. CO., Alhambra, Calif.
Mail.....copies of catalog bulletin on Clayton *Feather-Touch* control float valves to: AC-7

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MOST POWER
when it's *most needed*

CHEVROLET TRUCKS
With Valve-in-Head Engines Have Maximum Power at *Usable* Speeds

Chevrolet trucks lead in sales because so many truck users are convinced that Chevrolets are the best buy. That is, Chevrolet trucks lead because they have the most desirable balance of power, economy and durability—power to do the job well, economy to do the job at low cost, durability to stay on the job.

Chevrolet trucks owe their superiority in power, economy and durability largely to the fact that they have Valve-in-Head engines. That's why the Chevrolet truck engine excels others of its size—and even larger and costlier engines—in that most important of all truck engine qualities: *high pulling power, or torque, at low engine speeds.*

You don't have to "race your engine" when you need a lot of pulling power in a Chevrolet. This Valve-in-Head engine develops its top torque of 168 lb. ft. at only 1100 r.p.m.—a greater maximum torque than a larger "8" develops when whirling at 2000 r.p.m., and only 2 lb. ft. less than the maximum that a still larger and much costlier "8" develops when spinning at 2100 r.p.m. Highly important to the truck user also is another advantage of the Chevrolet Valve-in-Head design, the fact that this engine develops high torque over an extraordinarily wide range of engine speeds—160 lb. ft. or more all the way from only 600 r.p.m. up to 2000 r.p.m.

That's power for you—high power at low engine speed—maximum power at usable road speed—*most power when you need it most.*

Valve-in-Head means Ahead in Value

When you have to *race* an engine to get top power, fuel and oil costs go up and engine life is shortened. That explains why the Chevrolet Valve-in-Head engine, besides giving the most power when it is most needed, surpasses also in economy and in durability. Remember—*Valve-in-Head means Ahead in Value.*

CHEVROLET MOTOR DIVISION, *General Motors Sales Corporation,* DETROIT, MICHIGAN

The Samson Expanded Metal Litter Basket

Strong Litter Baskets of Expanded Metal

A new litter basket produced from expanded metal and made unusually strong to withstand battering, has been developed by Consolidated Expanded Metal Companies, Wheeling, W. Va. The basket is made from No. 9 gage expanded metal, the diamonds being 1½ inches wide before expanding. It is equipped with an 8-inch-high sheet metal steel bottom having drain holes. The expanded metal is reinforced by eight ⅜-inch steel vertical rods, which are in turn tied together at the "bumping point" by a ¼-inch-thick steel band. These rods are arc-welded top and bottom for added strength.

The manufacturer features the smooth rim, top and bottom, to protect the hands of workmen or pedestrians. Further, the ends of the mesh are retained inside the top and bottom rim and cannot be bent out to form a hazard to clothing or passers-by.

The basket is produced in four different meshes and may be had without vertical rods or rings where conditions are not severe. The baskets are available in any desired color, baked paint finish, or galvanized after fabrication. The basket is designed particularly for use in zoos, public parks and cemeteries.

Proportioneers Makes Big Chlorinator Sale

What is believed to be one of the largest orders ever placed for chlorinators has recently been received by Proportioneers, Inc., 9 Codding Street, Providence, R. I., which received an order for 125 units from one purchaser for use in a residential subdivision. The purchaser is the A. T. McIntosh Co., of Chicago, Ill., which is making the installations in a subdivision on the outskirts of Chicago, where every individual resident has his own pumped water supply with belt-drive connections from the water pump to the Proportioneers Chlor-O-Feeders, all 125 of which are identical and produced economically at a reasonable price on a production line, according to the manufacturer.

Personnel Changes in Chicago Bridge Company

A number of changes have been made in the personnel of the Sales Department of the Chicago Bridge & Iron Co., Chicago, Ill. S. C. Hamilton, district sales manager at Birmingham, Ala., has been transferred to Houston, Texas. R. A. Williams, who has been handling the sale of Morse filter plants, is transferred to the Dallas, Texas, office. H. F. Stearns is transferred from New York as District Sales Manager, in charge of the Birmingham territory.

A. H. Heineman has been moved from the New York to the Birmingham Sales Department. Herbert A. Guerin has been moved from the Cleveland office to the New York office. George Jewett is transferred from the Chicago to the New York office, after spending some time in Birmingham studying special work at that plant. Ray Menefee has been transferred from the Chicago Engineering Department to the Cleveland office.

W. H. Mallorie has also recently been transferred from the company's Engineering Department at Greenville, Pa., to Chicago, where he is assistant to Milo E. Smith, Advertising Manager.

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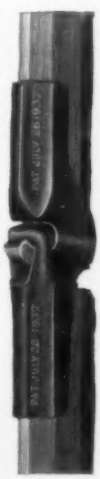
America's Finest

SEWER RODS



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- Root Cutters

"Let Stewart answer your sewer cleaning problems"

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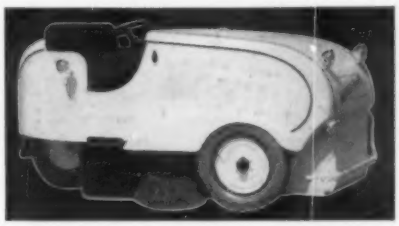
South Bend

GUTTER-SNIPE

PICKUP STREET SWEEPERS



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REAR WHEEL STEER

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SIZES 600 TO 3000 GALLONS CAPACITY FOR TRUCK OR TRAILER MOUNTING STREAMLINE AND CONVENTIONAL CLEANS FULL WIDTH STREET.

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Clay binder soil is the worst quagmire in wet weather and the worst dust producer in dry weather, yet used with proper aggregates will bind them firmly together.

To join good aggregates and binder soils into the world's finest low-cost roads requires a connecting link—moisture. So calcium chloride, which both supplies and maintains the moisture bond, is the connecting link between these two necessary types of soil materials.

Tests with the Burggraf Shear Test Machine show that the use of calcium chloride speeds up compaction, gives greater density and maintains that stability which prevents disintegration of the road.

Further extensive tests prove that calcium chloride will pay for itself in saving surface material and in reduced maintenance cost, so that maintenance dollars can develop an improved low-cost road into a fine base for higher type surfacing.

Write for literature explaining methods of selection and use of local soil materials for low-cost road betterment.

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MUNICIPAL SKY PATROLMEN

(See page 15)